

National Grid SA-COA **PRODUCTION FILE**

Contractor : ABB Contracting Co.

Project : SS 8709- 132/13.8kV in Alkharj City

Contract No : 11131113/00

Substation : 8709

**Subject : 132kV SS 8710 UGF (+R03.1)
Relay panel-1**

ABB

National Grid SA-COA

PRODUCTION FILE

Contractor : ABB Contracting Co.





Project : SS 8709- 132/13.8kV in Alkharj City

Contract No : 11131113/00

Substation : 8709

**Subject : 132kV SS 8710 UGF (+R03.2)
Relay panel-2**

ABB

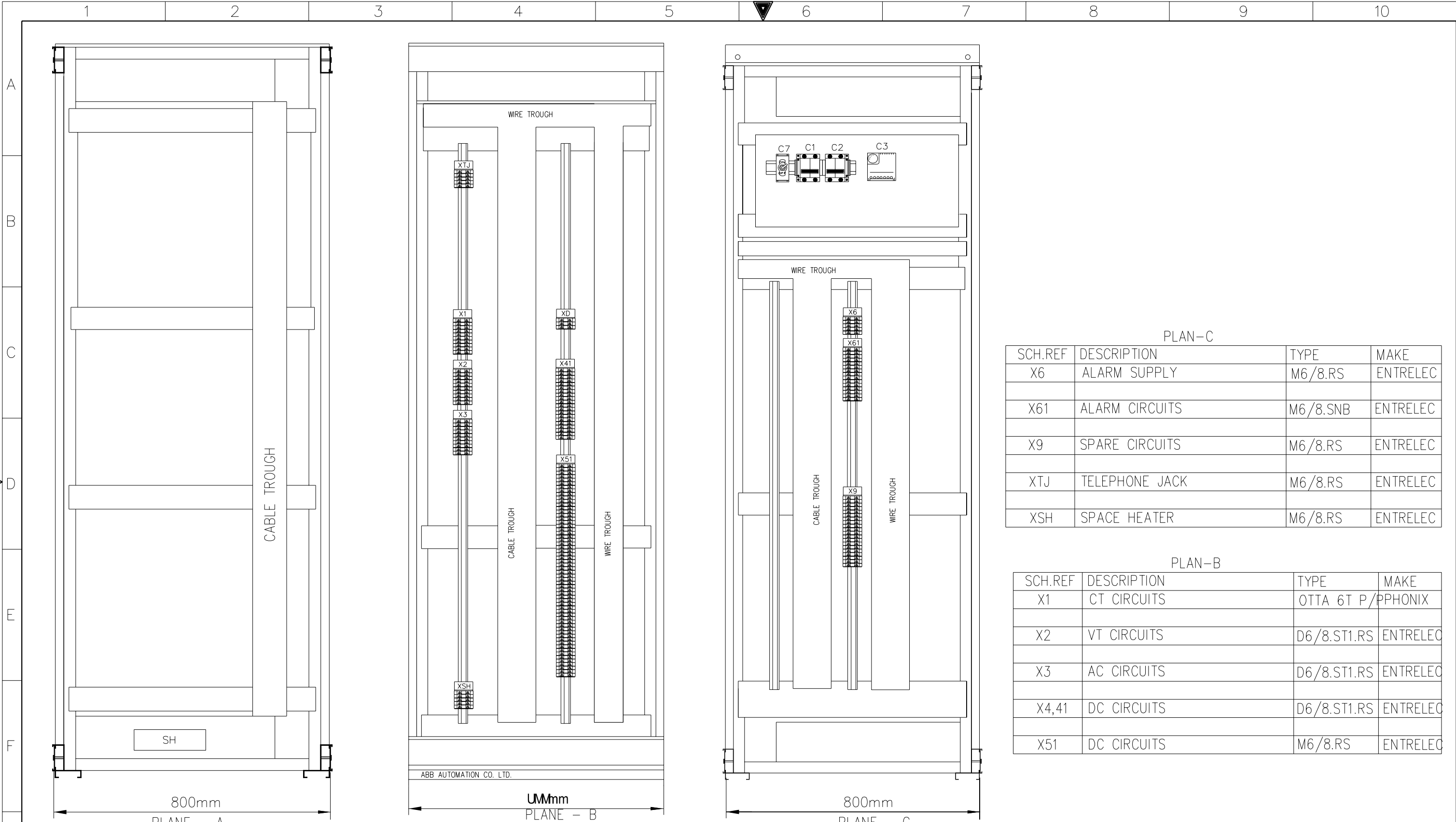
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NG/D2-D (2012/01)

DMS

VECTOR

NGD200



PLAN-C

SCH.REF	DESCRIPTION	TYPE	MAKE
X6	ALARM SUPPLY	M6/8.RS	ENTRELEC
X61	ALARM CIRCUITS	M6/8.SNB	ENTRELEC
X9	SPARE CIRCUITS	M6/8.RS	ENTRELEC
XTJ	TELEPHONE JACK	M6/8.RS	ENTRELEC
XSH	SPACE HEATER	M6/8.RS	ENTRELEC

PLAN-B

SCH.REF	DESCRIPTION	TYPE	MAKE
X1	CT CIRCUITS	OTTA 6T P/	PPHONIX
X2	VT CIRCUITS	D6/8.ST1.RS	ENTRELEC
X3	AC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X4,41	DC CIRCUITS	D6/8.ST1.RS	ENTRELEC
X51	DC CIRCUITS	M6/8.RS	ENTRELEC

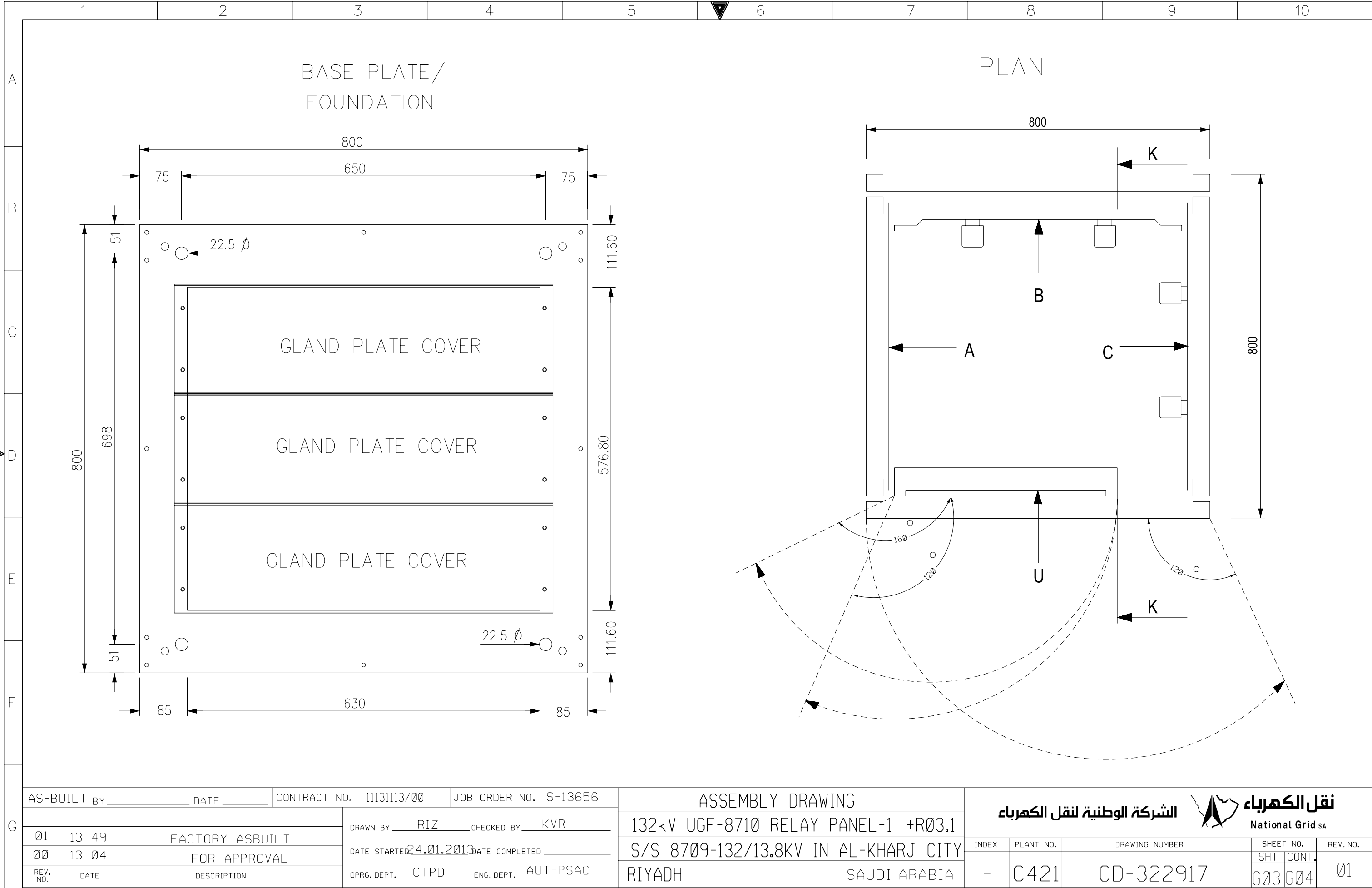
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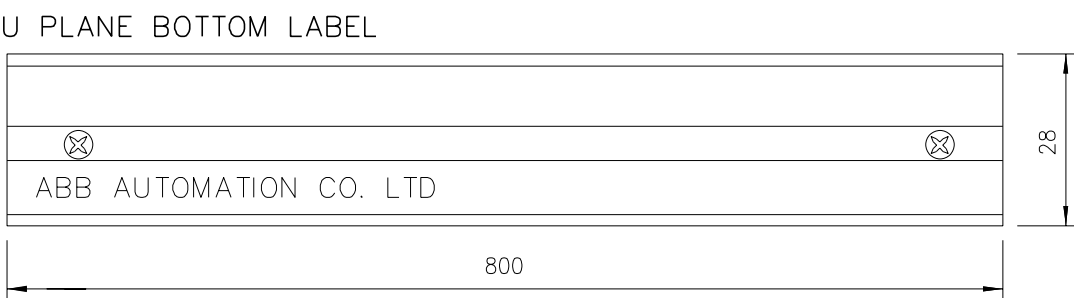
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MANUFACTURING LABEL



ABB Automation Co.Ltd.

PROJECT :	National Grid SA S/S 8709
ORDER REFERENCE :	2875 RF S13656
YEAR OF MANUFACTURE:	2013
PANEL NO. :	+R03.1
DRAWING NO. :	S13656-CD-323919

MADE IN THE KINGDOM OF SAUDI ARABIA

AS-BUILT BY _____ DATE _____	CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656
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			DRAWN BY <u> RIZ </u> CHECKED BY <u> KVR </u>
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00	13 04	FOR APPROVAL	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <u> CTPD </u> ENG. DEPT. <u> AUT-PSAC </u>

ASSEMBLY DRAWING

132kV UGF-8710 RELAY PANEL-1 +R03.1

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH

SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



نقل الكهرياء

National Grid SA





INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322917	SHT	CONT.	01
			G04	L00	

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NGD200

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A	SR. NO.	GA. REF.	SCH. REF.	D E S C R I P T I O N		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN						
				RELAY CUBICLE- +R03.1 ACCOMODATING THE FOLLOWING			1	VSH 200	ABB								
	1	U05.5001	87L-1	NUMERICAL DIFF PROTECTION TERMINAL WITH THE FOLLOWING		298	1	RED 670	ABB	1MRK 004 810-DC	SWEDEN						
				FEATURES :		298A											
				ANALOG MODULE(6I+6U)		299											
				RATED POWER SUPPLY MODULE : (90-250V)DC													
				BINARY I/P MODULE -1NO													
				BINARY O/P MODULE-1NO													
				OPTICAL ETHERNET MODULE IEC 61850-8-1/100 BASE FX CHANNEL GLASS													
				MEDIUM GRAPHIC HMI,15 CONTROLLABLE OBJECTS,1X 19"													
B	2	U12.5001	TS-1	TEST SWITCH FOR RED 670 RELAY		224	1	RTXP24	ABB	RK 926 315-AC							
	3	U16.5001	S86F1	PUSH BUTTON FOR 86CBF & 86F1 TRIP RELAY RESET PB		232	2	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN						
		U16.5002	S86CBF	BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102							
				CONTACT DATA : 1NO+1NC													
	4	U16.5003	S86B-1	PUSH BUTTON FOR 86B & LT TRIP RELAY RESET PB		232	3	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN						
		U16.5004	S86B-2	BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102							
		U16.5005	LT	CONTACT DATA : 1NO+1NC													
C																	
	5	U16.5006	S01	PUSH BUTTON FOR PROTECTION IN		232	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN						
				BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102							
				CONTACT DATA : 1NO+1NC													
	6	U16.5007	S02	PUSH BUTTON FOR PROTECTION OUT		232	1	MP1-10B	ABB	1SFA 611 100 R1006	SWEDEN						
				BUTTON COLOUR : BLACK				MCBH-20		1SFA 611 605 R1102							
				CONTACT DATA : 1NO+1NC													
		7	U16.5008	L01	INDICATION LAMP FOR FPFM OUT		277	1	MC1-10010	ABB	1SFA 611 400 R1003						
D				LENS : WHITE				MCBH-003		1SFA 611 605 R1400	SWEDEN						
				LED RATING : 110-130V,4-6MA				KA2-2145		1SFA 616 921 R2145							
				HOLDER RATING : 130V WITH RESISTORS DIODEBLOCK													
E																	
F																	
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.	
			DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1		SHT	CONT.									
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A	SR. NO.	GA. REF.	SCH. REF.	D E S C R I P T I O N		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN	
	8	U25.5001	86F1	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		232	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK	
				AUXILIARY VOLTAGE : 110 - 125V DC								
				OUTPUT CONTACTS : 8NO+2NC								
B				OPERATION INDICATOR : HAND RESET FLAG								
	9	U25.5002	85R1	HIGH BURDEN TYPE SELF RESET TRIP RELAY		233	1	MVAJ101	ALSTOM	MVAJ101RA0800A	UK	
				AUXILIARY VOLTAGE : 110 - 125V DC								
				OUTPUT CONTACTS : 10 NO								
C				OPERATION INDICATOR : SELF RESET FLAG								
	10	U25.5003	86CBF	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		276	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK	
				AUXILIARY VOLTAGE : 110 - 125V DC								
				OUTPUT CONTACTS : 8NO+2NC								
D				OPERATION INDICATOR : HAND RESET FLAG								
	11	U25.5004	86B-1	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		276	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK	
				AUXILIARY VOLTAGE : 110 - 125V DC								
				OUTPUT CONTACTS : 8NO+2NC								
E				OPERATION INDICATOR : HAND RESET FLAG								
	12	U25.5005	86B-2	HIGH BURDEN TYPE HAND/ELECTRICAL RESET TRIP RELAY		277	1	MVAJ105	ALSTOM	MVAJ105RA0802A	UK	
				AUXILIARY VOLTAGE : 110 - 125V DC								
				OUTPUT CONTACTS : 8NO+2NC								
F				OPERATION INDICATOR : HAND RESET FLAG								
G												
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	13	U29.101	74R1/74IT1	DUAL COIL RELAY FOR R1 DC /74IT1 DC		232,233	2	RXSF 1	ABB	RK 271 019-AN	SWEDEN
		U29.301	74RS/74IS	AUXILIARY VOLTAGE : 110-125VDC		277					
				CONTACT DATA : 1NO + 2NC PER COIL							
B	14	U29.107	K01M	BISTABLE RELAY		232	1	RXMVB 4	ABB	RK 251 401-AP	SWEDEN
				AUXILIARY VOLTAGE : 125V DC							
				CONTACT DATA : 7NC+7NO							
	15	U29.119	TMR/86F1	DELAY FOR PICKUP RELAY		232	3	RXKL1	ABB	1MR 000 066-AB	SWEDEN
C		U29.319	TMR/86B-1	AUXILIARY VOLTAGE : 24-250V DC		276					
		U29.125	TMR/86B-2	CONTACT DATA : 2C/O		277					
	16	U29.325	R1	RESISTOR UNIT FOR TCS		291	1	RXTMA1	ABB	RK 711 008-AF	SWEDEN
				RESISTOR WATT : 6.8 K OHMS							
D											
E											
F											
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INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322917	SHT L03 CONT. L04	01





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A	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N		SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN			
	17			MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT		216	5	S282UC-K6 S2-H02	ABB	GH S282 0164 R0317 GH S270 1916 R0003	GERMANY			
		U39.5001	Q1	R1± SUPPLY										
		U39.5002	Q2	IT1± SUPPLY										
		U36.5001	Q3	RS± SUPPLY										
		U36.5002	Q4	IS± SUPPLY										
B		U36.5003	Q5	TC1± SUPPLY										
	18	U39.5003	C01	CONVENIENCE OUTLET 10A, 127V AC		211	1	USM45 & USMS45	LEGRAND	74140 & 74180	FRANCE			
			C02	CONVENIENCE OUTLET 10A, 220V AC										
	19		C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS		211	2	S202-P10 S2C-H11L	ABB	2CDS 252 001 R0427 2CDS 270 1917 R0001	SWEDEN			
	20		C3	THERMOSTAT FOR SPACE HEATER, 5-60° C		211	1	SK 3110	RITTAL	SK 3110				
	21	U39.5004	TJ	TELEPHONE JACK 1GANG 4WIRE		211	1	EDF410	EDISON	EDF410	THIWAN			
C	22		C7	ON/OFF SWITCH FOR SPACE HEATER		211	1	M2SS1-10B MCBH-10	ABB	1SFA 611 200 R1006 1SFA 611 605 R1101	SWEDEN			
	23		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP		211	1	LS30P	ABB	1SBV 010213 R1202	SWEDEN			
	24		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY, 20W		211	1	T-4	SUNON	SP-20W				
	25		SH	SPACE HEATER, 150W, 120V, 60Hz		211	1	RICA	GRUPPO	1FZEK 006 C001	ITALY			
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	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY							
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
									-	C421	CD-322917	SHT L04	CONT. L05	01

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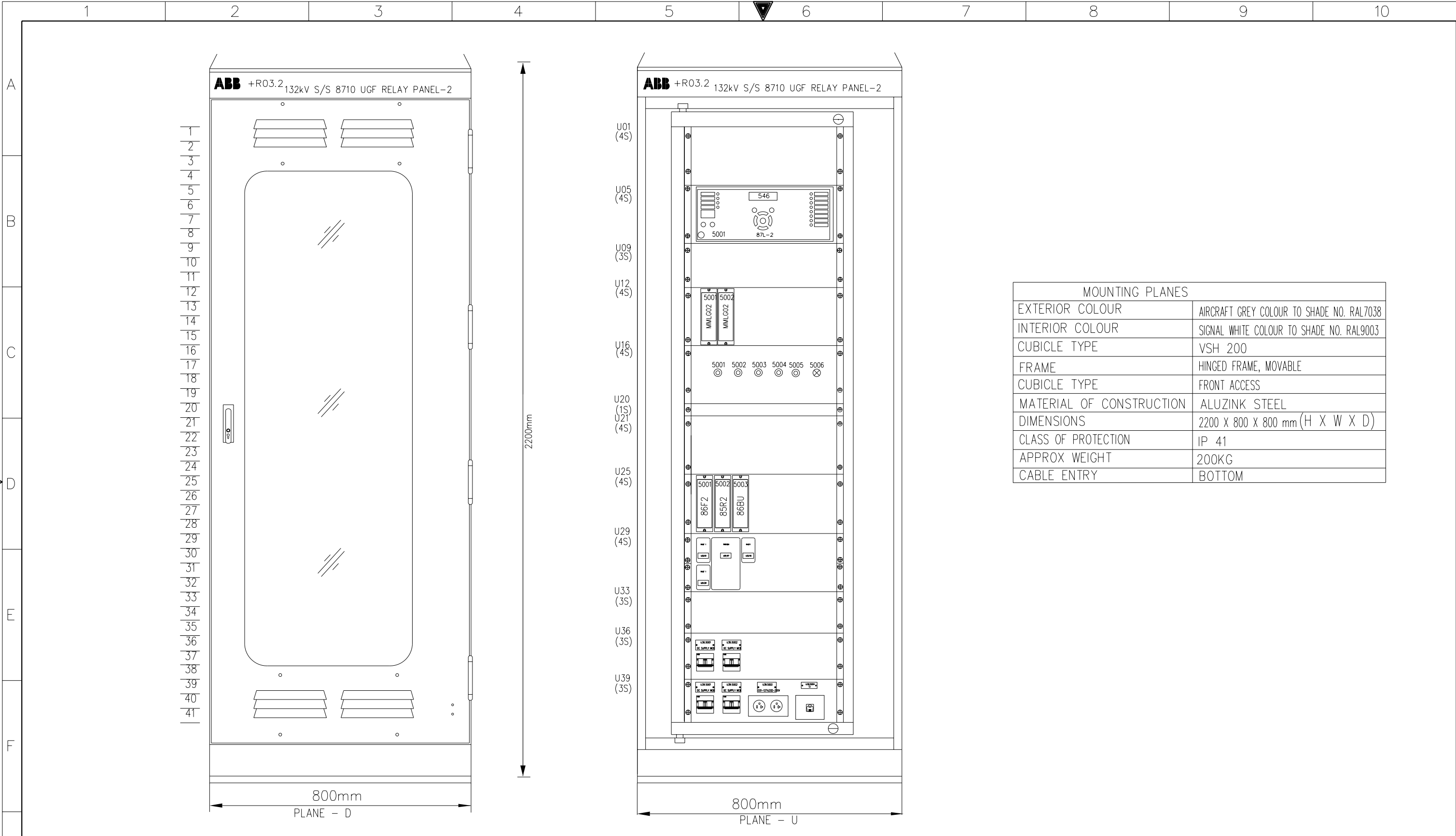
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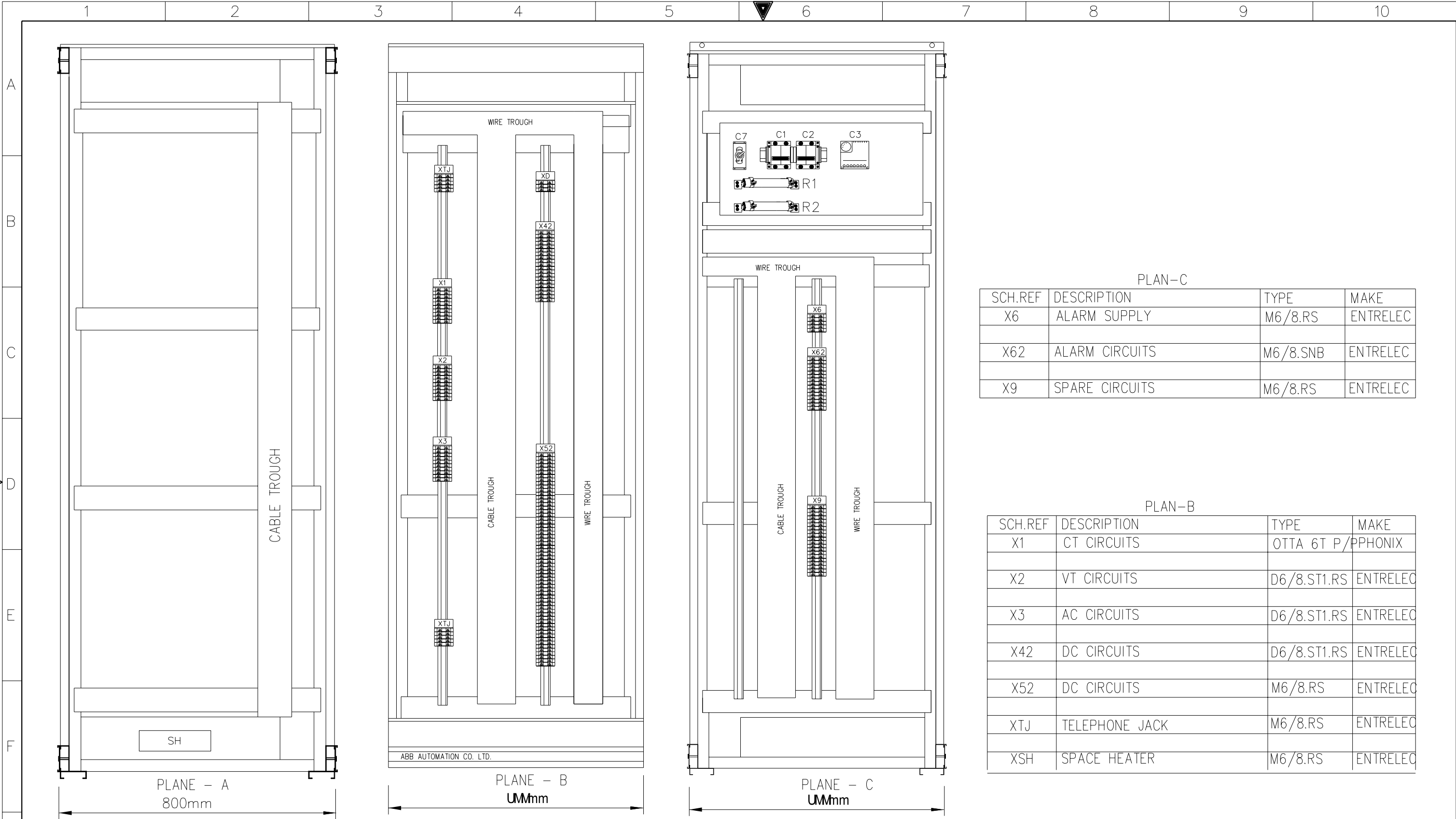
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B																																																						
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NG/D2-D (2012/01)
DMS VECTOR NGD200



MOUNTING PLANES	
EXTERIOR COLOUR	AIRCRAFT GREY COLOUR TO SHADE NO. RAL7038
INTERIOR COLOUR	SIGNAL WHITE COLOUR TO SHADE NO. RAL9003
CUBICLE TYPE	VSH 200
FRAME	HINGED FRAME, MOVABLE
CUBICLE TYPE	FRONT ACCESS
MATERIAL OF CONSTRUCTION	ALUZINK STEEL
DIMENSIONS	2200 X 800 X 800 mm (H X W X D)
CLASS OF PROTECTION	IP 41
APPROX WEIGHT	200KG
CABLE ENTRY	BOTTOM


AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING			الشركة الوطنية لنقل الكهرباء National Grid sa				
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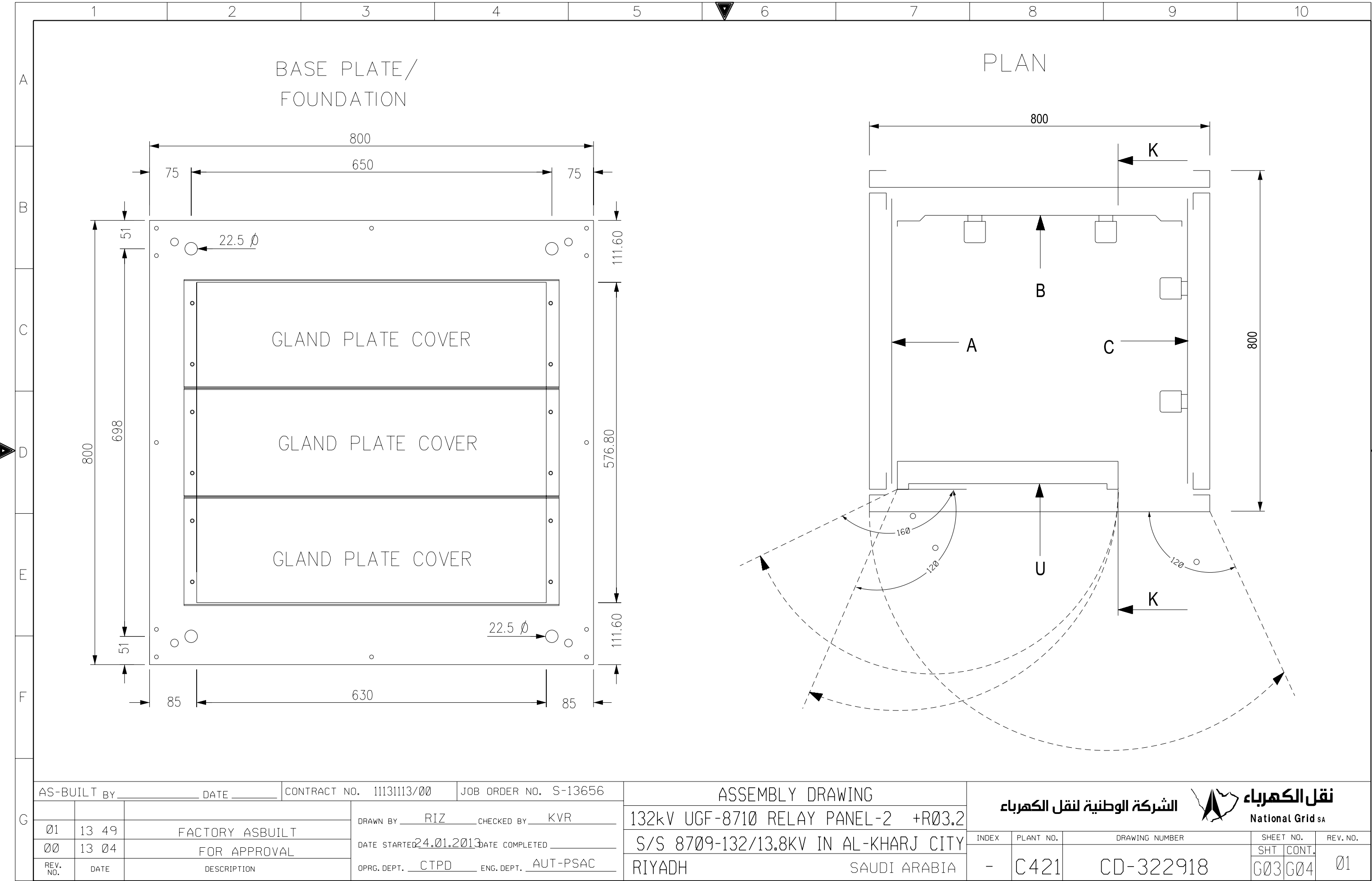


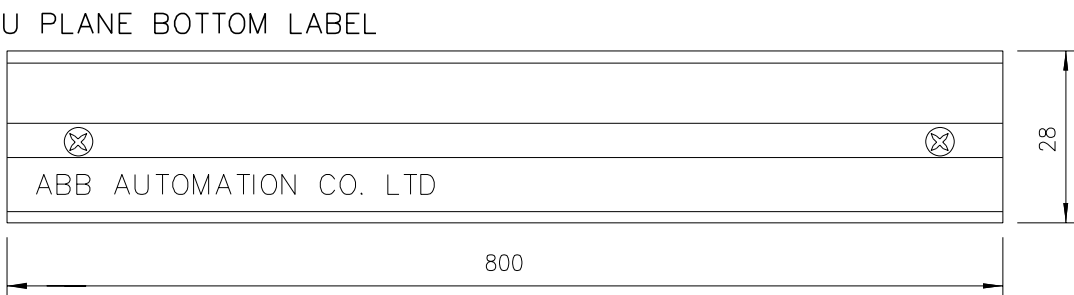
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AS-BUILT BY _____		DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ		CHECKED BY KVR	
00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013		DATE COMPLETED _____	
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC	

ASSEMBLY DRAWING					
132kV UGF-8710 RELAY PANEL-2 +R03.2					
S/S 8709-132/13.8KV IN AL-KHARJ CITY					
RIYADH SAUDI ARABIA					





الشركة الوطنية لنقل الكهرباء				نقل الكهرباء	
				National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.	
-	C421	CD-322918		REV. NO.	
				01	
				SHT	CONT.
				G02	G03





 ABB Automation Co.Ltd.	
PROJECT :	National Grid SA S/S 8709
ORDER REFERENCE :	2875 RF S13656
YEAR OF MANUFACTURE:	2013
PANEL NO. :	+R03.2
DRAWING NO. :	S13656-CD-323919
MADE IN THE KINGDOM OF SAUDI ARABIA	


AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		ASSEMBLY DRAWING		<div><div><div>الشركة الوطنية لنقل الكهرباء</div><div><div><div><div></div><div></div></div><div>National Grid sa</div></div></div></div></div>								
			DRAWN BY _____ RIZ _____ CHECKED BY _____ KVR			132kV UGF-8710 RELAY PANEL-2 +R03.2			INDEX		PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.	
01	13 49	FACTORY ASBUILT		DATE STARTED 24.01.2013 DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY								SHT		CONT.
00	13 04	FOR APPROVAL		OPRG. DEPT. _____ CTPD _____ ENG. DEPT. _____ AUT-PSAC			RIYADH SAUDI ARABIA			-		C421	CD-322918		G04		L00
REV. NO.	DATE	DESCRIPTION															

	1	2	3	4	5	6	7	8	9	10																																																						
A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD., 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																								
B																																																																
C	CONTRACTOR : ABB Contracting Company																																																															
	CLIENT : National Gridsa																																																															
D	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY																																																															
	SUBSTATION : S/S 8709																																																															
E	CONTRACT NO. : 11131113/00																																																															
	TITLE : LIST OF APPARATUS +R03.2 [Under Ground Feeder]																																																															
F																																																																
G	<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="3">COVER SHEET</td><td colspan="2"> نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa</td></tr><tr><td>01</td><td>13 49</td><td>FACTORY ASBUILT</td><td colspan="3">DRAWN BY RIZ CHECKED BY KVR</td><td colspan="3">132kV UGF-8710 RELAY PANEL-2 +R03.2</td><td>INDEX</td><td>PLANT NO.</td><td>DRAWING NUMBER</td><td>SHEET NO.</td><td>REV. NO.</td></tr><tr><td>00</td><td>13 04</td><td>FOR APPROVAL</td><td colspan="3">DATE STARTED 24.01.2013 DATE COMPLETED _____</td><td colspan="3">S/S 8709-132/13.8KV IN AL-KHARJ CITY</td><td>-</td><td>C421</td><td>CD-322918</td><td>SHT L00</td><td>CONT. L01</td></tr><tr><td>REV. NO.</td><td>DATE</td><td>DESCRIPTION</td><td colspan="3">OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC</td><td colspan="3">RIYADH SAUDI ARABIA</td><td></td><td></td><td></td><td></td><td>01</td></tr></table>										AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COVER SHEET			 نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa		01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY KVR			132kV UGF-8710 RELAY PANEL-2 +R03.2			INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013 DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY			-	C421	CD-322918	SHT L00	CONT. L01	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			RIYADH SAUDI ARABIA							01
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A	SR. NO.	LOC. REF	SCH. REF.	D E S C R I P T I O N				SHT	QTY.	TYPE	MAKE	ORD INFORMATION			COUNRTY OF ORIGIN					
				RELAY CUBICLE– +R03.2 ACCOMODATING THE FOLLOWING					1											
	1	U05.5001	87L–2	NUMERICAL HIGH SPEED CURRENT DISTANCE PROTECTION				498	1	P546	ALSTOM	P54631NK6M0710M			UK					
				VERSION : 1 & 3 POLE TRIPPING/RECLOSING MHO/QUAD CHAR																
				AUX : 110V–250V DC : 100–120V																
B				In/Vn : DUAL RATED CT (1/5A)																
				HARDWARE : EHTHER NET (100mbits) PLUS irig–b modulated																
				PRODUCT OPTION : CH1–1300nm SINGLE MODE																
				CH2–1300nm SINGLE MODE																
				PROTOCOL OPTION : IEC61850+COURIER VIA REAR RS485 PORT																
C				MOUNTING : 19” RACK,2A LOGICAL INPUTS,32 RELAY OUT PUTS																
				LANGUAGE : ENGLISH																
				SOFTWARE : 71																
	2	U12.5001	TS–1	TEST SWITCH FOR P546 RELAY				422	2	MMLG02	ALSTOM	MMLG02 R1AA 0001E			UK					
		U12.5002	TS–2																	
D	3	U16.5001	S03	PUSH BUTTON FOR FPSM IN SELECTION				432	1	MP1–10B	ABB	1SFA 611 100 R1006			SWEDEN					
				BUTTON COLOUR : BLACK						MCBH–20		1SFA 611 605 R1102								
				CONTACT DATA : 1NO + 1NC																
	4	U16.5002	S04	PUSH BUTTON FOR FPSM OUT SELECTION				432	1	MP1–10B	ABB	1SFA 611 100 R1006			SWEDEN					
				BUTTON COLOUR : BLACK						MCBH–20		1SFA 611 605 R1102								
E				CONTACT DATA : 1NO + 1NC																
	5	U16.5003	S86BU	PUSH BUTTON FOR 86BU RESET				443	1	MP1–10B	ABB	1SFA 611 100 R1006			SWEDEN					
				BUTTON COLOUR : BLACK						MCBH–20		1SFA 611 605 R1102								
				CONTACT DATA : 1NO + 1NC																
	6	U16.5004	S86F2	PUSH BUTTON FOR 86F2 RESET				432	1	MP1–10B	ABB	1SFA 611 100 R1006			SWEDEN					
F				BUTTON COLOUR : BLACK						MCBH–20		1SFA 611 605 R1102								
				CONTACT DATA : 1NO + 1NC																
	7	U16.5005	LT	PUSH BUTTON FOR 86F2 RESET				431	1	MP1–10B	ABB	1SFA 611 100 R1006			SWEDEN					
				BUTTON COLOUR : BLACK						MCBH–20		1SFA 611 605 R1102								
				CONTACT DATA : 1NO + 1NC																
F	8	U16.5006	L01	INDICATION LAMP OUT				431	1	MC1–100W	ABB	1SFA 611 400 R1003			SWEDEN					
				LENS : WHITE						MCBH–003		1SFA 611 605 R1400								
				LENS RATING 110–130V,4–6MA						KA2–2145		1SFA 616 921 R2145								
				HOLDER RATING :130V WITH RESISTORS DIODE BLOCK																
G	AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00			JOB ORDER NO. S-13656			COVER SHEET				الشركة الوطنية لنقل الكهرباء National Grid sa						
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<div>NG/D2-D (2012/01)</div> <div>DMS VECTOR NGD200</div>																																																																																																																															

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	SR. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N	SHEET NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN						
	15			MCB 2 POLE 6A, FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT	416	4	S 282 UC-K6 S2-H02	ABB	GH S282 0164 R0377 GH S270 1916 R0003	GERMANY						
		U39.5001	Q1	Q1 R2± SUPPLY												
		U39.5002	Q2	Q2 R3 ± SUPPLY												
		U36.5001	Q3	Q3 IT2+ SUPPLY												
		U36.5002	Q4	Q4 TC2 + SUPPLY												
B	16	U39.5003	C01	CONVENIENCE OUTLET 10A, 127V AC	411	1	USM45 & USMS45	LEGRAND	74140 & 74180	FRANCE						
			C02	CONVENIENCE OUTLET 10A, 220V AC												
			C1,C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS	411	2	S202-K10 S2C-H11L	ABB	2CDS 253 001 R0104 2CDS 200 936 R0001	GERMANY						
	17		C3	THERMOSTAT FOR SPACE HEATER, 5-60 ° C	411	1	SK 3110	RITTAL	SK 3110	THIWAN						
	18	U39.5004	TJ	TELEPHONE JACK 1GANG 4WIRE	411	1	EDF410	EDISON	EDF410	SWEDEN						
C	19		C7	ON/OFF SWITCH FOR SPACE HEATER	411	1	M2SS1-10B MCBH-10	ABB	1SFA 611 200 R1006 1SFA 611 605 R1101							
	20		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP	411	1	LS30PKB1302	ABB	1SBV 010213 R1202	SWEDEN						
	21		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY, 20W	411	1	T-4	SUNON	SP-20W							
	22		SH	SPACE HEATER, 150W, 120V, 60Hz	411	1	RICA	GRUPPO	1FZEK 006 C001	ITALY						
D	23		R1	FIXED RESISTOR FOR TRIP CIRCUIT SUPERVISION CKT.	491	2	GRF 30/200	DANOTHERM	GRF 30/200	GERMANY						
			R2	2.5Kohm,15W												
E																
F																
G	AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS			<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء National Grid sa</div>					
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	REV. NO.	DATE	DESCRIPTION											L04	L05	

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AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>																																										
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SR. NO.	ITEM DESIGNATION	D E S C R I P T I O N	SHEET.NO.	QTY.	TYPE	MAKE	ORDERING INFORMATION	COUNTRY OF ORIGIN
24	X1	BOLT CONNECTING TERMINAL BLOCKS FOR DISCONNECTABLE CT CIRCUITS	501	10	OTTA 6T P/P	PHOENIX	0790462	GERMANY
	X2	SPRING LOADED TERMINAL BLOCKS FOR DISCONNECTABLE VT CIRCUITS	501	5	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
	X3	SPRING LOADED TERMINAL BLOCKS FOR DISCONNECTABLE AC CIRCUITS	501	10	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
	X42	SPRING LOADED TERMINAL BLOCK FOR DISCONNECTABLE DC CIRCUITS	501	50	D6/8.ST1.RS	ENTRELEC	1SNA 115 831 R0400	FRANCE
	X52	SPRING LOADED TERMINAL BLOCK FOR DC PROTN. CIRCUITS	501	50	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	X62,X6	KNIFE TYPE TERMINAL BLOCKS FOR COMMON ALARM CIRCUITS	501	15,5	M6/8.SNB	ENTRELEC	1SNA 115 685 R1200	FRANCE
	X9	SPRING LOADED TERMINAL BLOCKS FOR SPARE CIRCITS	501	15	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	XTJ	SPRING LOADED TERMINAL BLOCKS FOR TELEPHONE JACK	501	5	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	XSH	SPRING LOADED TERMINAL BLOCKS FOR SPACE HEATER	501	3	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE
	XD	TERMINAL BLOCKS WITH BLOCKING DIODE	501	3	M4/6.S	ENTRELEC	11521310	FRANCE
					IN5408	MEJDAF	02-049	
					V150ZA1	RS	239-270	
	X6	SPRING LOADED TERMINAL BLOCKS FOR ALARM CIRCITS	501	5	M6/8.RS	ENTRELEC	1SNA 115 688 R2500	FRANCE

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REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA																								





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A			POWER SYSTEMS NETWORK MANAGEMENT PROTECTION AND SUBSTATION AUTOMATION SYSTEMS WBS NO: S-13656					ABB AUTOMATION COMPANY LTD. 414, AL-KHARJ ROAD SECOND INDUSTRIAL CITY RIYADH-11383 K.S.A																																																									
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C																																																																	
D	CONTRACTOR : ABB Contracting Company																																																																
	CLIENT : National Gridsa																																																																
	PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY																																																																
	SUBSTATION : S/S 8709																																																																
E	CONTRACT NO. : 11131113/00																																																																
	TITLE : SCHEMATICS DRAWINGS (Under Ground Feeder)																																																																
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REV. NO. DATE DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		- C421 CD-322919				

CONTENTS	ABB SHT.NO.	REV.00	REV.01	REV.02
COVER SHEET	000	X	X	
CONTENTS SHEET	001	X	X	
CONTENTS SHEET	002	X	X	
GRAPHICAL SYMBOLS FOR DIAGRAMS	011	X	X	
GRAPHICAL SYMBOLS FOR DIAGRAMS	012	X	X	
COMMON LEGEND	013	X	X	
FERULE AND WIRING DETAILS	014	X	X	
DRAWING REFERENCE	015	X	X	
DRAWING REFERENCE	016	X	X	
PRIMARY SYSTEM	051-052	X	X	
AC SUPPLY FOR ILLUMINATION & POWER SOCKET	211	X	X	
AC MCB AUX CONTACTS	212	X	X	
DC SUPPLY DISTRIBUTION	216	X	X	
CURRENT TRANSFORMER INPUTS -87L-1	221	X	X	
VOLTAGE TRANSFORMER INPUTS - 87L-1	222	X	X	
COMMUNICATION CIRCUITS	223	X	X	
MAIN-1 PROT. 87L-1 RELAY - BINARY INPUTS	231	X	X	
MAIN-1 CABLE DIFFL. PROTECTION TRIP RELAY CKT.	232	X	X	
MAIN-1 INTER TRIP RELAY CKT.	233	X	X	
COMMUNICATION INTERFACE	246	X	X	
CBF-1/2 & BUSBAR PROTN-1 TRIP RELAY CIRCUIT	276	X	X	
BUSBAR PROTN-2 TRIP RELAY CIRCUIT	277	X	X	
MAIN-1 INDICATION CIRCUIT	278	X	X	
TRIP COIL-1 SUPERVISION CIRCUIT	291	X	X	
TRIP COIL-2/DELAYTRIP/CBF INITIATION CONTACTS	292	X	X	

CONTENTS	ABB SHT.NO.	REV.00	REV.01	REV.02
CLOSE BLOCK CIRCUIT	293	X	X	
COMMON ALARM CIRCUITS	294	X	X	
SPARE CONTACTS	295	X	X	
BLOCK REFERENCE (TRM MODULE)	298	X	X	
BLOCK REFERENCE (BI)	299	X	X	
BLOCK REFERENCE (BO)	300	X	X	
TERMINAL BLOCKS PANEL +R03.1	301	X	X	

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SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FUSE / LINK		WATTMETER		ELEMENT WITH NEGATED INHIBITING INPUT
	FUSE WITH THE SUPPLY SIDE INDICATED		VARMETER		ELEMENT WITH INPUT WHICH DOES NOT CARRY ANY LOGIC INFORMATION
	SINGLE-PHASE TRANSFORMER WITH TWO SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)		POWER FACTOR METER		ELEMENT WITH POSTPONED OUTPUT
			POSITION INDICATOR		AND-ELEMENT WITH TWO INPUTS
	SINGLE-PHASE TRANSFORMER WITH THREE SEPARATE WINDINGS (TWO ALTERNATIVE FORMS)		SYNCHROSCOPE		OR-ELEMENT WITH TWO INPUTS
			RECORDING VOLTMETER		LOGIC THRESHOLD ELEMENT WITH FOUR INPUTS AND THRESHOLD VALUE 2
	SINGLE-PHASE TRANSFORMER WITH FERRO MAGNETIC CORE		RECORDING WATTMETER		ELEMENT WITH THREE INPUTS FOR "2 AND ONLY 2"
	SINGLE-PHASE VOLTAGE TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		HOUR METER		EXCLUSIVE OR-ELEMENT WITH THREE INPUTS
			WATT-HOUR METER		LOGIC IDENTITY ELEMENT WITH THREE INPUTS
	SINGLE-PHASE VOLTAGE TRANSFORMER WITH TWO SECONDARY WINDINGS (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		WATT-HOUR METER FOR ENERGY FROM A BUSBAR SYSTEM		MAJORITY ELEMENT WITH THREE INPUTS
			ELEMENT WITH STATIC INPUT		NEGATOR
	CURRENT TRANSFORMER (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		ELEMENT WITH STATIC NEGATED INPUT		NAND ELEMENT WITH TWO INPUTS
			ELEMENT WITH STATIC NEGATED OUTPUT		NOR ELEMENT WITH TWO INPUTS
	CURRENT TRANSFORMER WITH TWO CORES (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		ELEMENT WITH DYNAMIC INPUT		BISTABLE ELEMENT
			ELEMENT WITH DYNAMIC NEGATED INPUT		
	CURRENT TRANSFORMER WITH TWO SECONDARY WINDINGS ON ONE CORE (MULTI-LINE AND SINGLE-LINE REPRESENTATION)		ELEMENT WITH INHIBITING INPUT		
	FILTER				
	HIGH-PASS FILTER				
	BAND-PASS FILTER				
	VOLTMETER				
	AMMETER				

AS-BUILT BY _____ DATE _____

CONTRACT NO. 11131113/00

JOB ORDER NO. S-13656

01	13 49	FACTORY ASBUILT	DRAWN BY RIZ	CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013	DATE COMPLETED
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSAC

GRAPHICAL SYMBOLS FOR DIAGRAMS

132kV UGF-8710 RELAY PANEL-1/2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH

SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء



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LEGENDS

±R1
±R2
±R3
±IT
FL
BB RS±
BB CBF± /CBF±

DC SUPPLY – MAIN PROTECTION
DC SUPPLY – SECONDARY PROTECTION
DC SUPPLY – BACK UP PROTECTION
DC SUPPLY – INTER TRIP
DC SUPPLY – FLASHING CIRCUIT
DC SUPPLY – BUS BAR – PROTECTION RESET
DC SUPPLY – CBF PROTECTION

R
CR
ECC
LOCAL
REMOTE

RESET BUS – ALARM SYSTEM
CONTROL ROOM
ENERGY CONTROL CENTRE
THE LOCATION OF CONTROLLED DEVICE
ANY OTHER LOCATION NOT LOCAL

ON
OFF
A
T
S
CS
CT
LS
LT
LC
LO
RO
OP
RE

CB NORMALLY OPEN AUXILIARY CONTACT
CB NORMALLY CLOSED AUXILIARY CONTACT
COMMON
TEST POSITION
SERVICE POSITION
CLOSE IN SERVICE POSITION
CLOSE IN TEST POSITION
LOCAL SERVICE
LOCAL TEST
LOCAL CLOSE
LOCAL OPEN
REMOTE OPEN
OPERATE
RESET

NOTES

LABELS

WHITE LABEL WITH BLACK LETTERING WILL BE PROVIDED FOR ALL MOUNTED APPARATUS EQUIPMENT IDENTIFICATION AND FUNCTION REFERENCE LABEL WILL BE PROVIDED FOR FRONT MOUNTED EQUIPMENTS OF THE PANEL AND EQUIPMENT IDENTIFICATION LABEL WILL BE PROVIDED FOR INTERNALLY MOUNTED EQUIPMENTS

WIRING

PVC INSULATED 600V GRADE
2.5 SQ.mm. YELLOW COLOURED FOR CT CIRCUITS
2.5 SQ.mm. RE COLOURED FOR VT CIRCUITS
1.5 SQ.mm. GREY COLOURED FOR DC SUPPLY, SCADA AND CONTROL CIRCUITS
2.5 SQ.mm. BLACK COLOURED FOR AVC AND AC CIRCUITS
2.5 SQ.mm. YELLOW/GREEN COLOURED FOR EARTHING CONNECTIONS
FOLLOWING MARKERS SHALL BE PROVIDED ON FOLLOWING WIRES:
+ SIGN FOR DC + WIRE
– SIGN FOR DC – WIRE


LUGS

A. CT CIRCUITS– RING TYPE
B. OTHER CIRCUITS – SPADE TYPE

FERULLING

YELLO TUBE 3.2 mm FOR 1.5SQ mm WIRES AND 4.2 FOR 2.5 SQ mm WIRES (AS PER 31 – TMSS–1, RE.0)

الشركة الوطنية لنقل الكهرباء



National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322919	SHT	CONT.	01
			013	014	

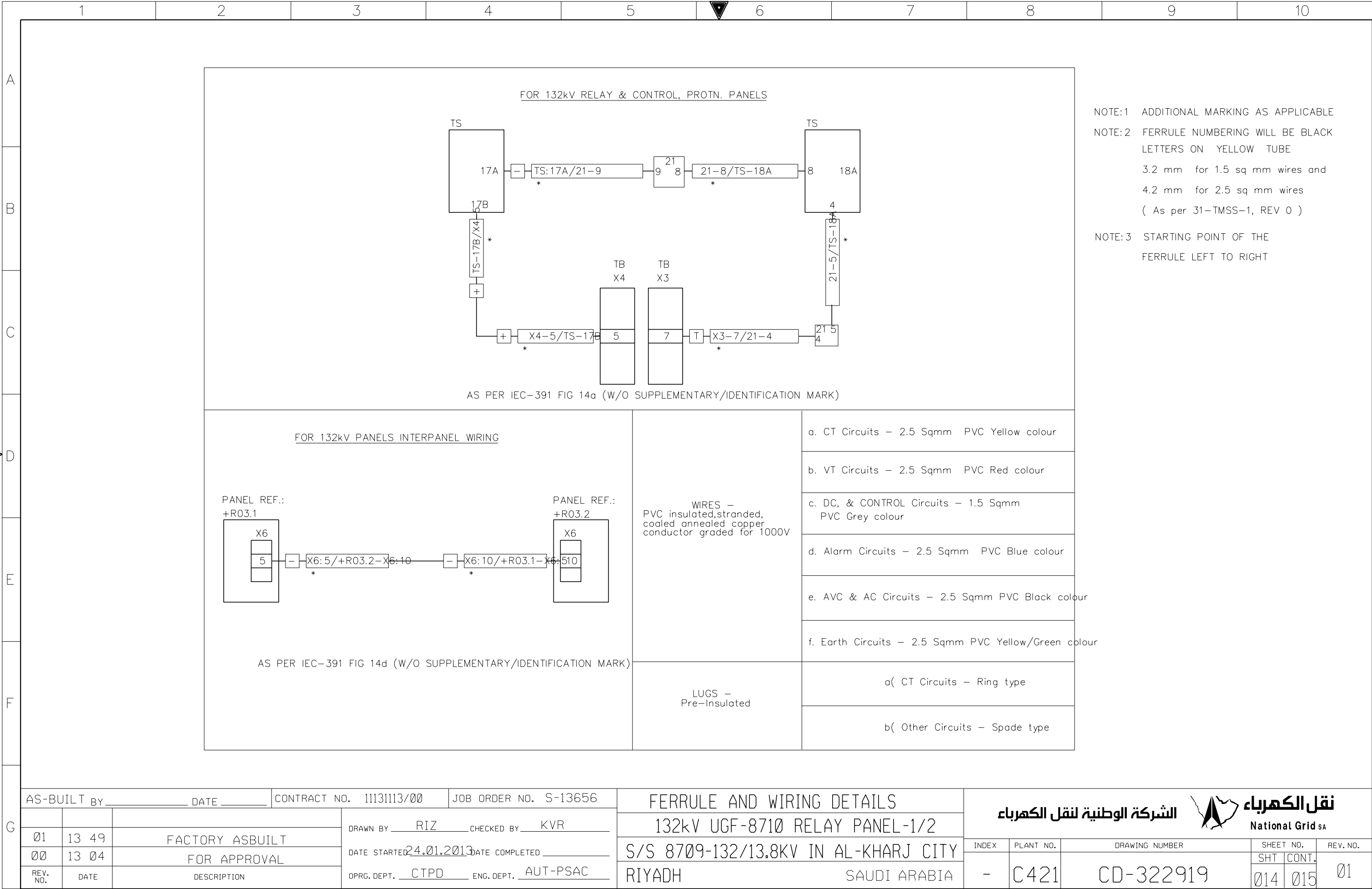
NG/D2-D (2012/01)


DMS

VECTOR

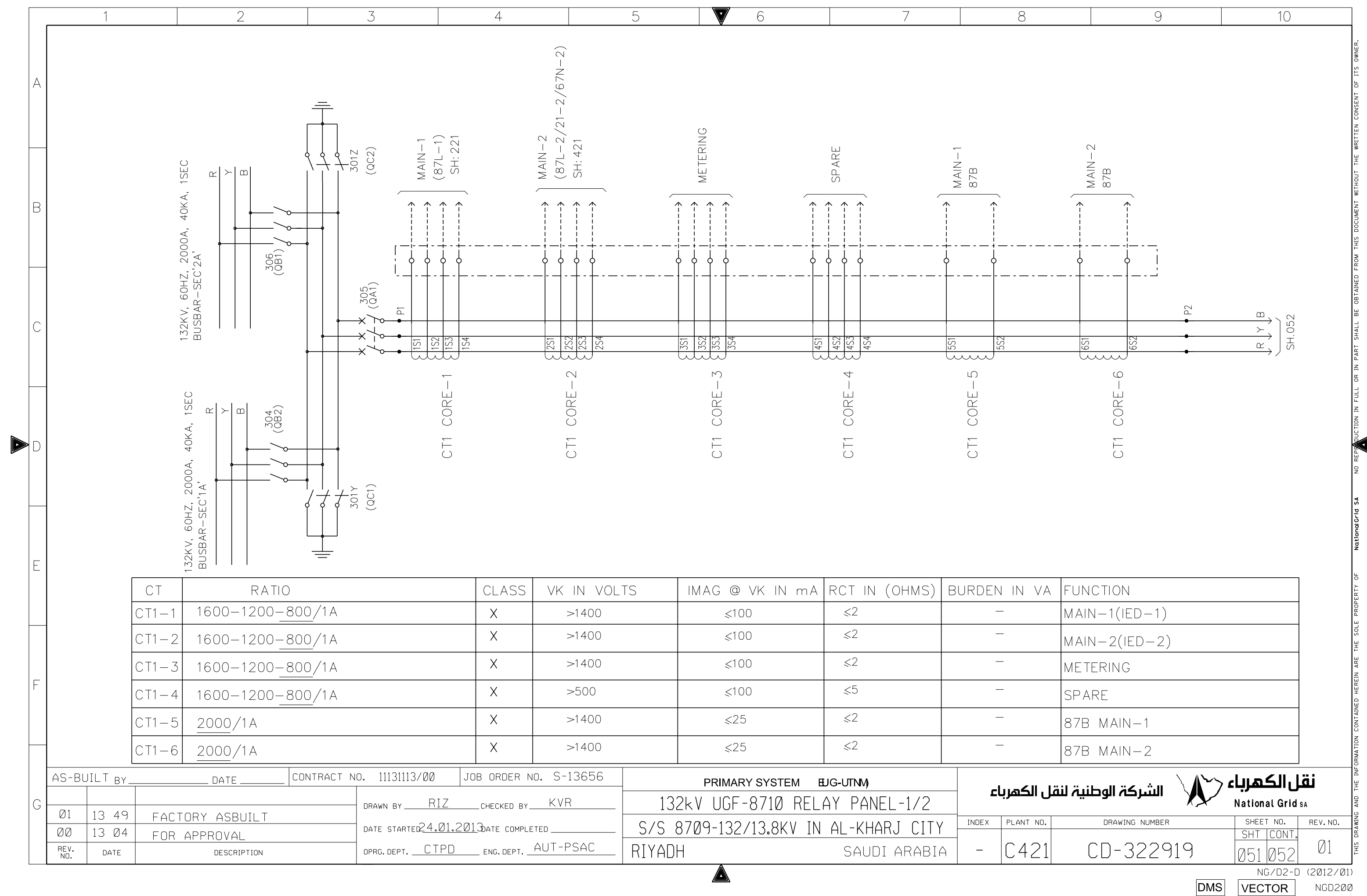
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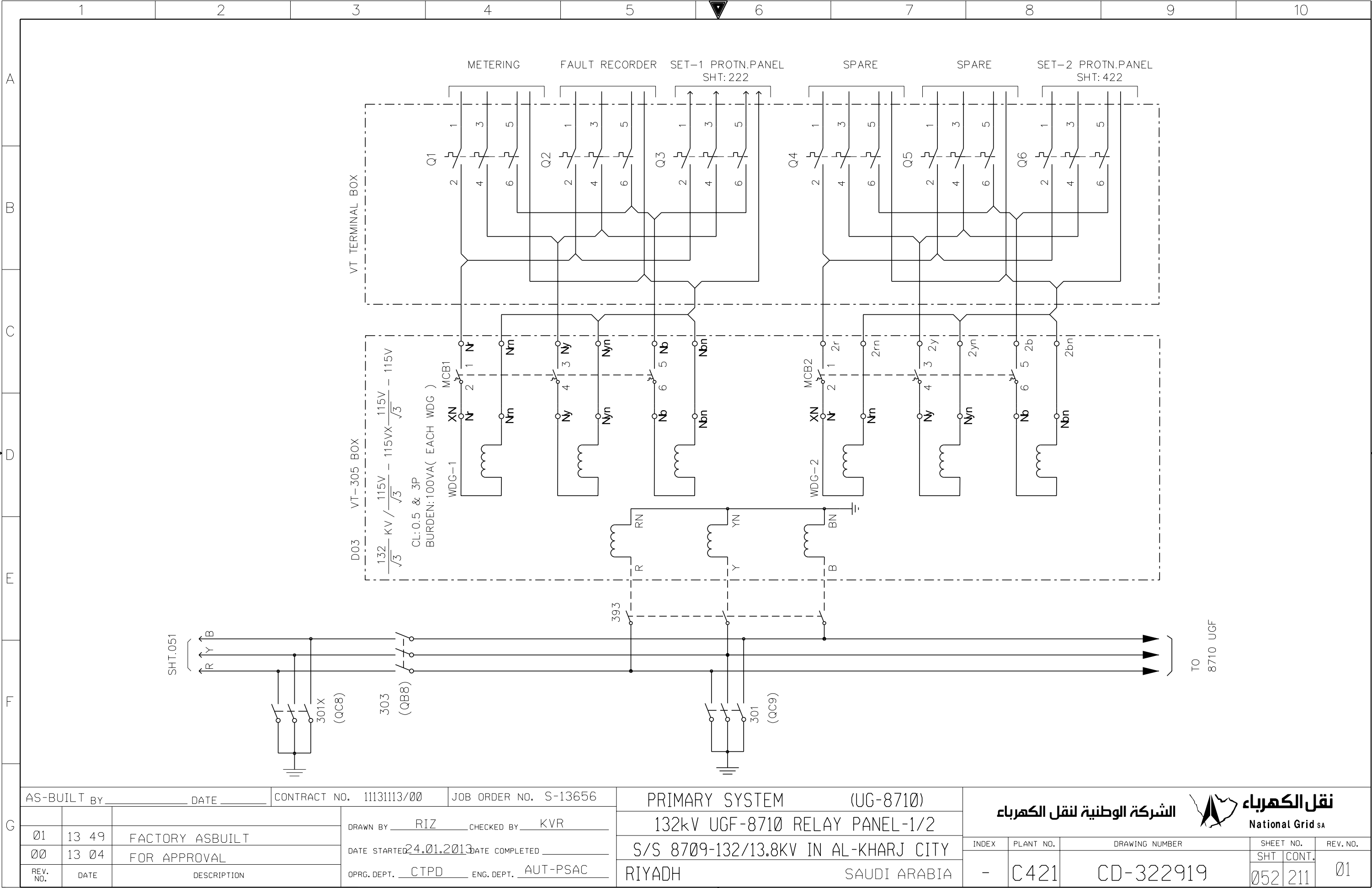
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AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00				JOB ORDER NO. S-13656				DRAWING REFERENCES				<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء National Grid sa</div>					
		DRAWN BY <u> RIZ </u> CHECKED BY <u> KVR </u>						132kV UGF-8710 RELAY PANEL-1/2											
01	13 49							FACTORY ASBUILT						S/S 8709-132/13.8KV IN AL-KHARJ CITY					
00	13 04	FOR APPROVAL						RIYADH SAUDI ARABIA				INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.	
REV. NO.	DATE	DESCRIPTION						OPRG. DEPT. <u> CTPD </u> ENG. DEPT. <u> AUT-PSAC </u>				-	C421	CD-322919		SHT	CONT.	01	
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AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DRAWING REFERENCES		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>																																																								
			DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		132kV UGF-8710 RELAY PANEL-1/2		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.																																																								
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	00	13 04	FOR APPROVAL				RIYADH SAUDI ARABIA																																																										
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>																																																												






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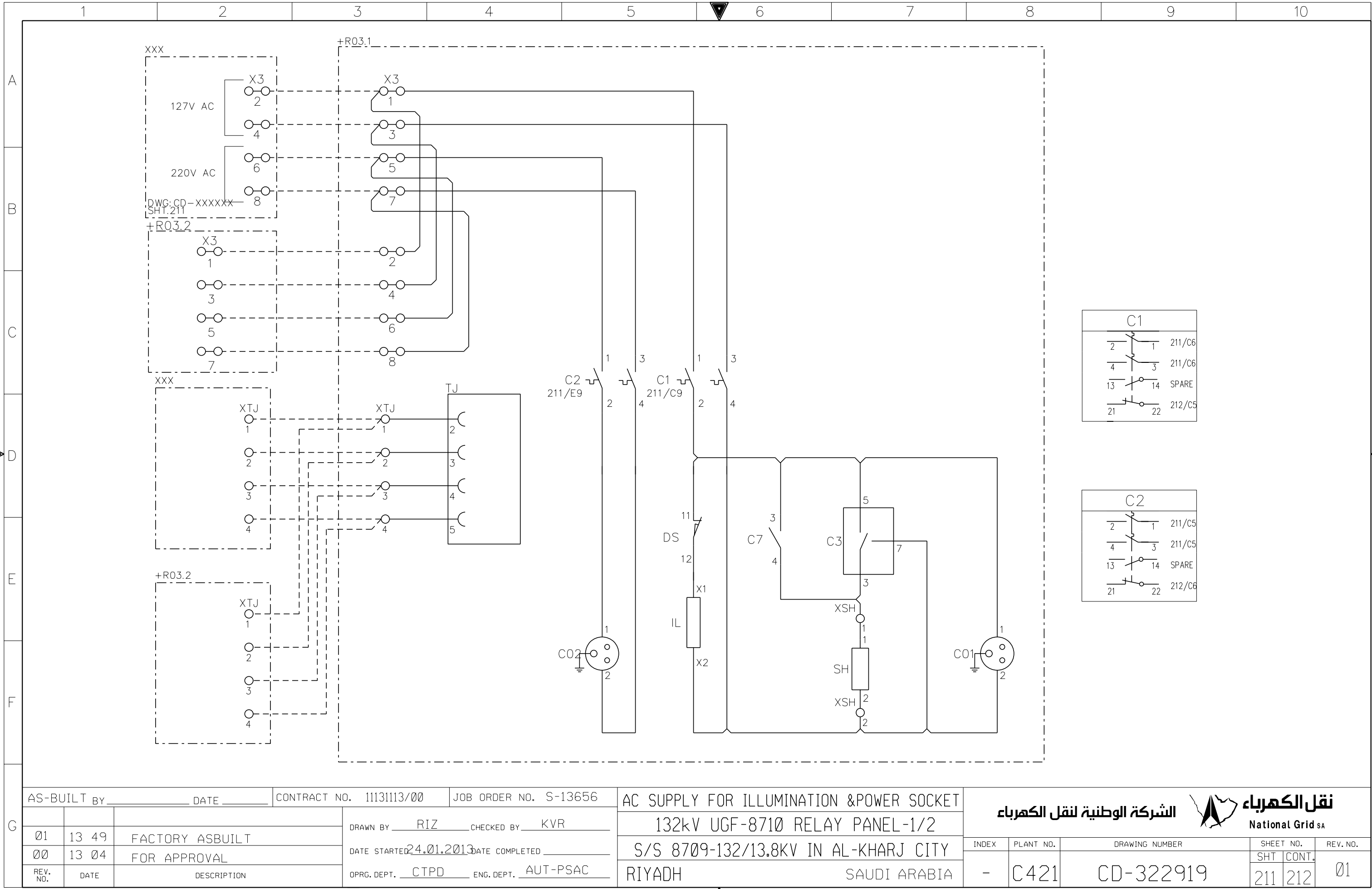
AS-BUILT BY _____		DATE _____	CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ			CHECKED BY KVR
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013			DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD			ENG. DEPT. AUT-PSAC

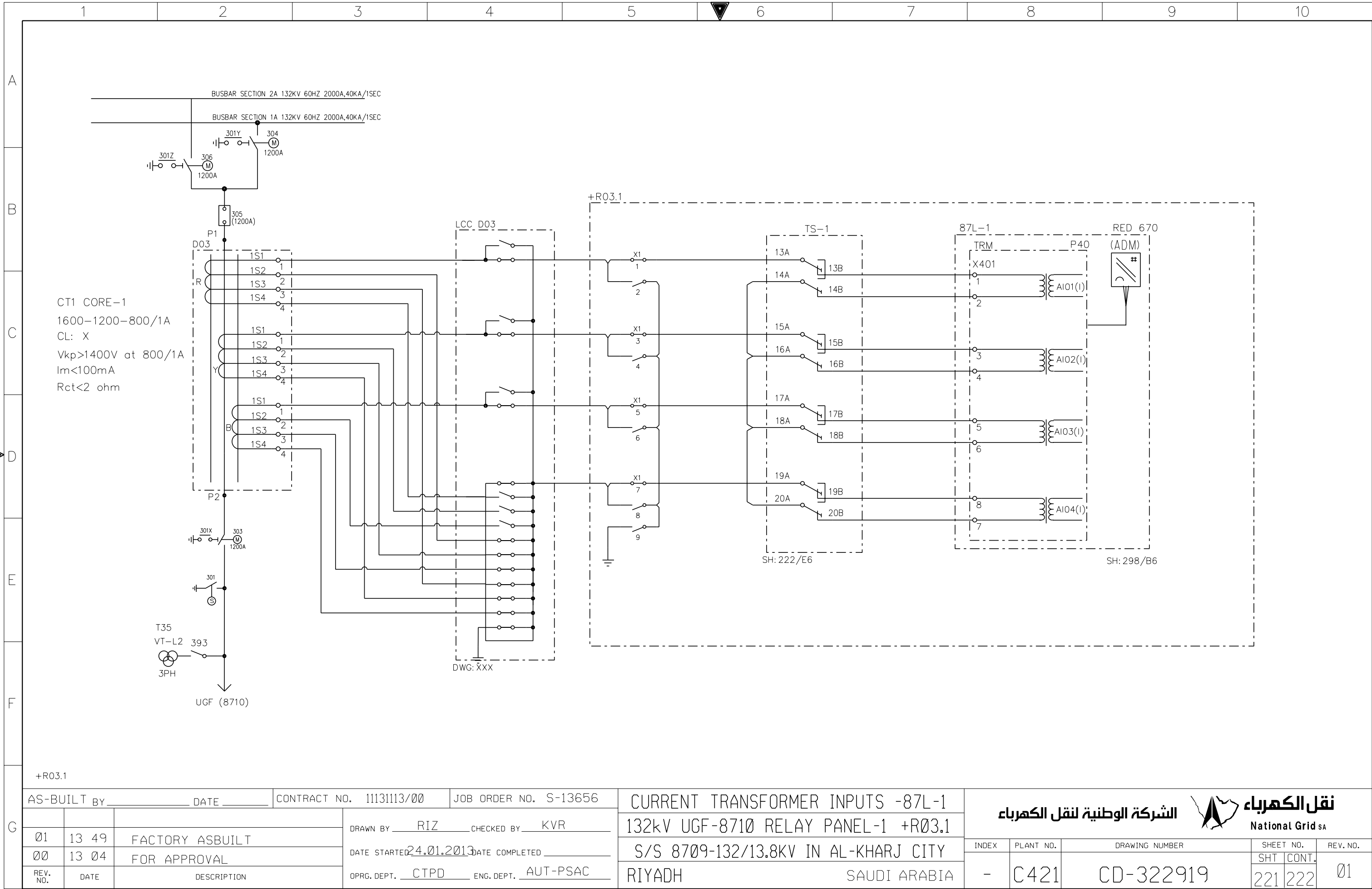
PRIMARY SYSTEM (UG-8710)	
132kV UGF-8710 RELAY PANEL-1/2	
S/S 8709-132/13.8KV IN AL-KHARJ CITY	
RIYADH	SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

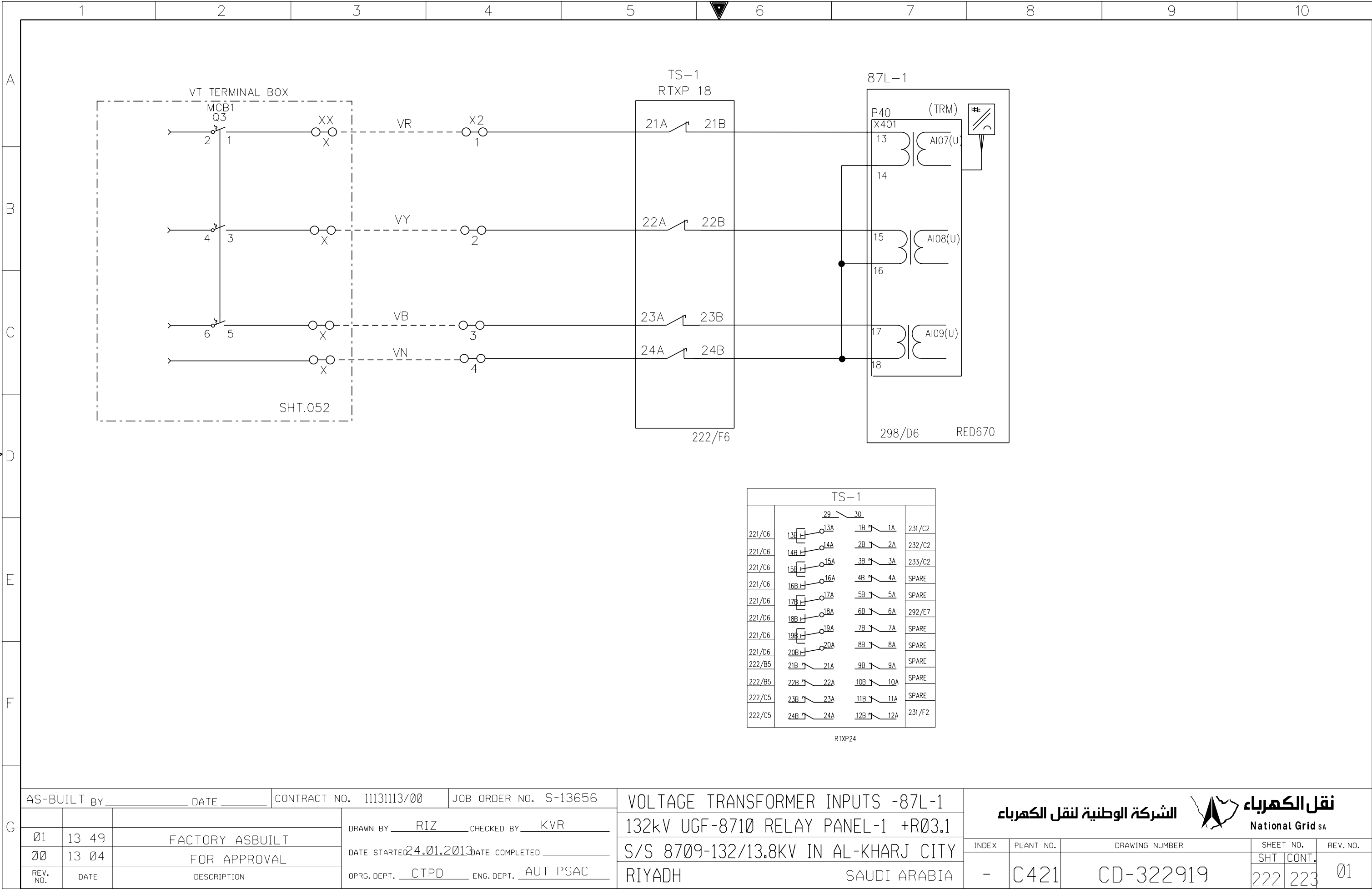
 **نقل الكهرباء**
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
-	C421	CD-322919	SHT 052	CONT. 211	01

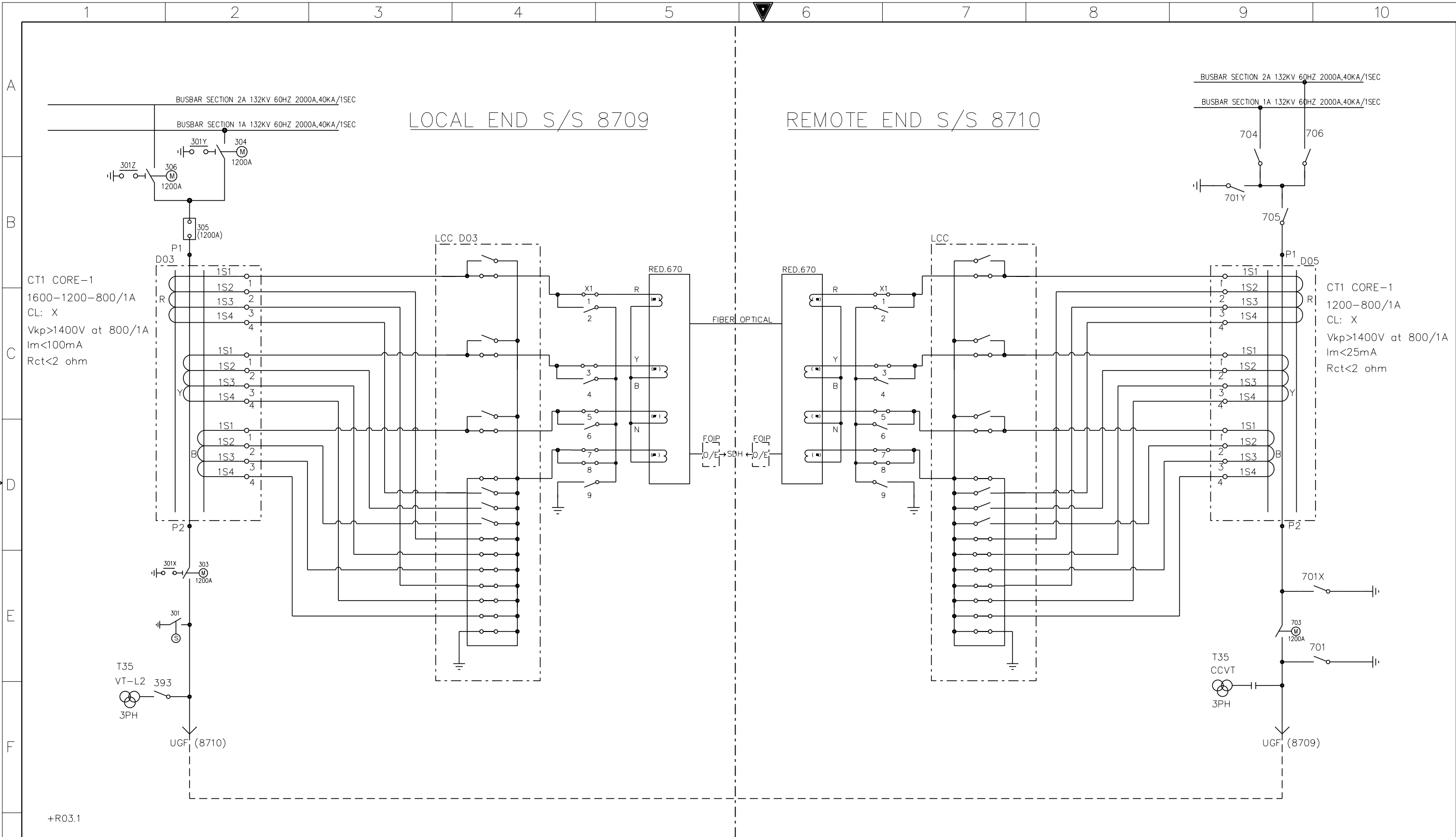




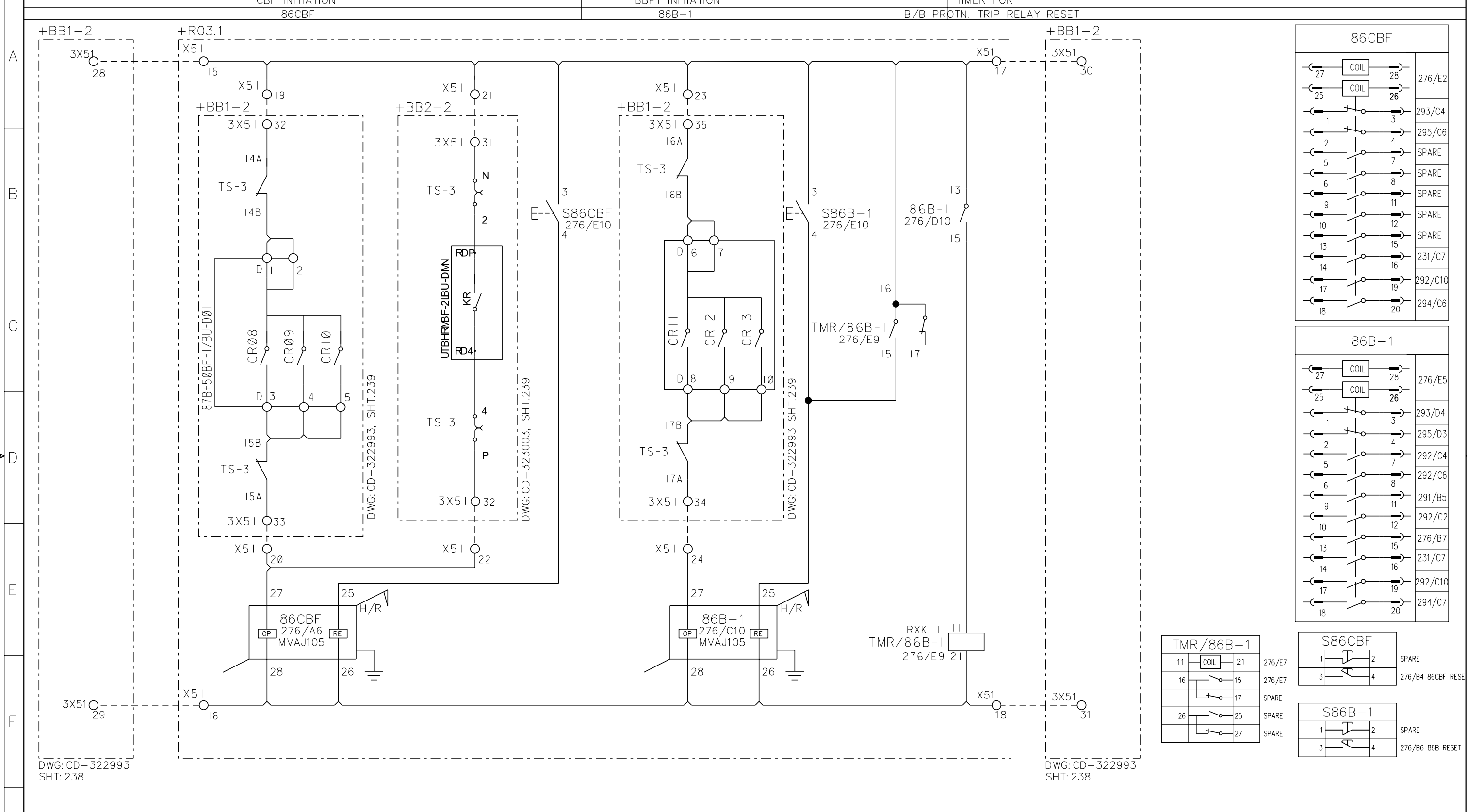
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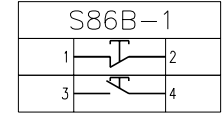
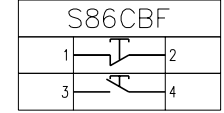
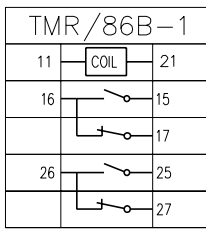
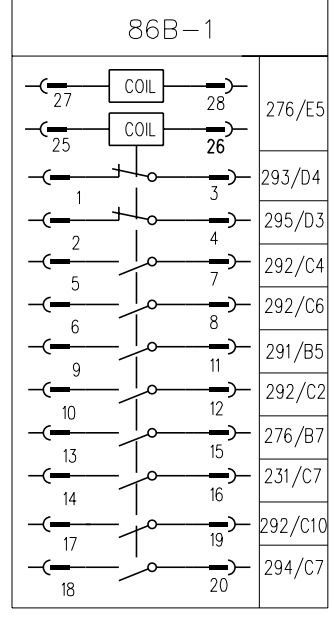
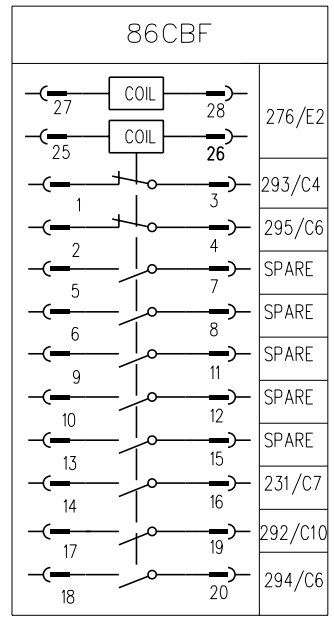
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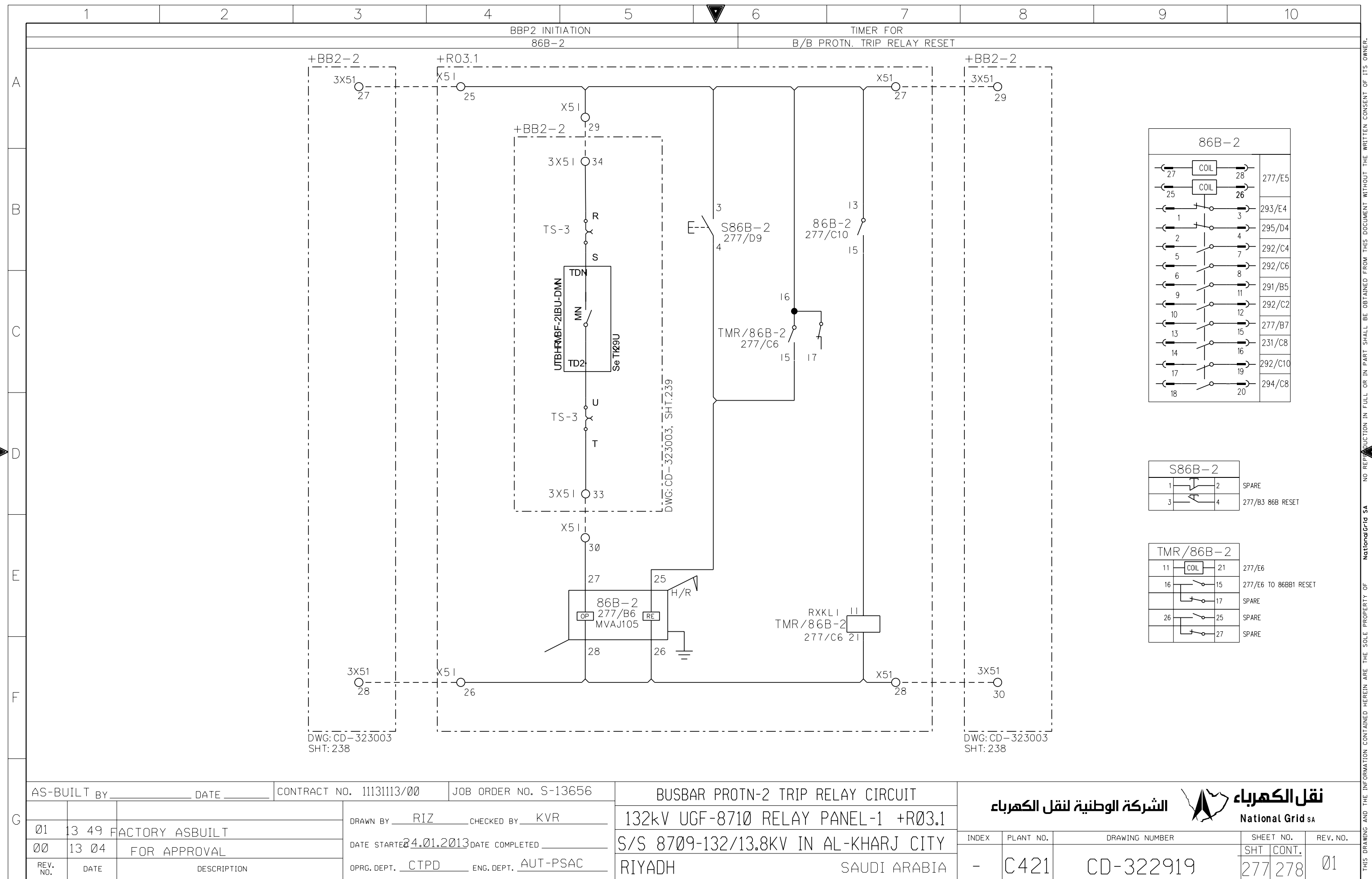


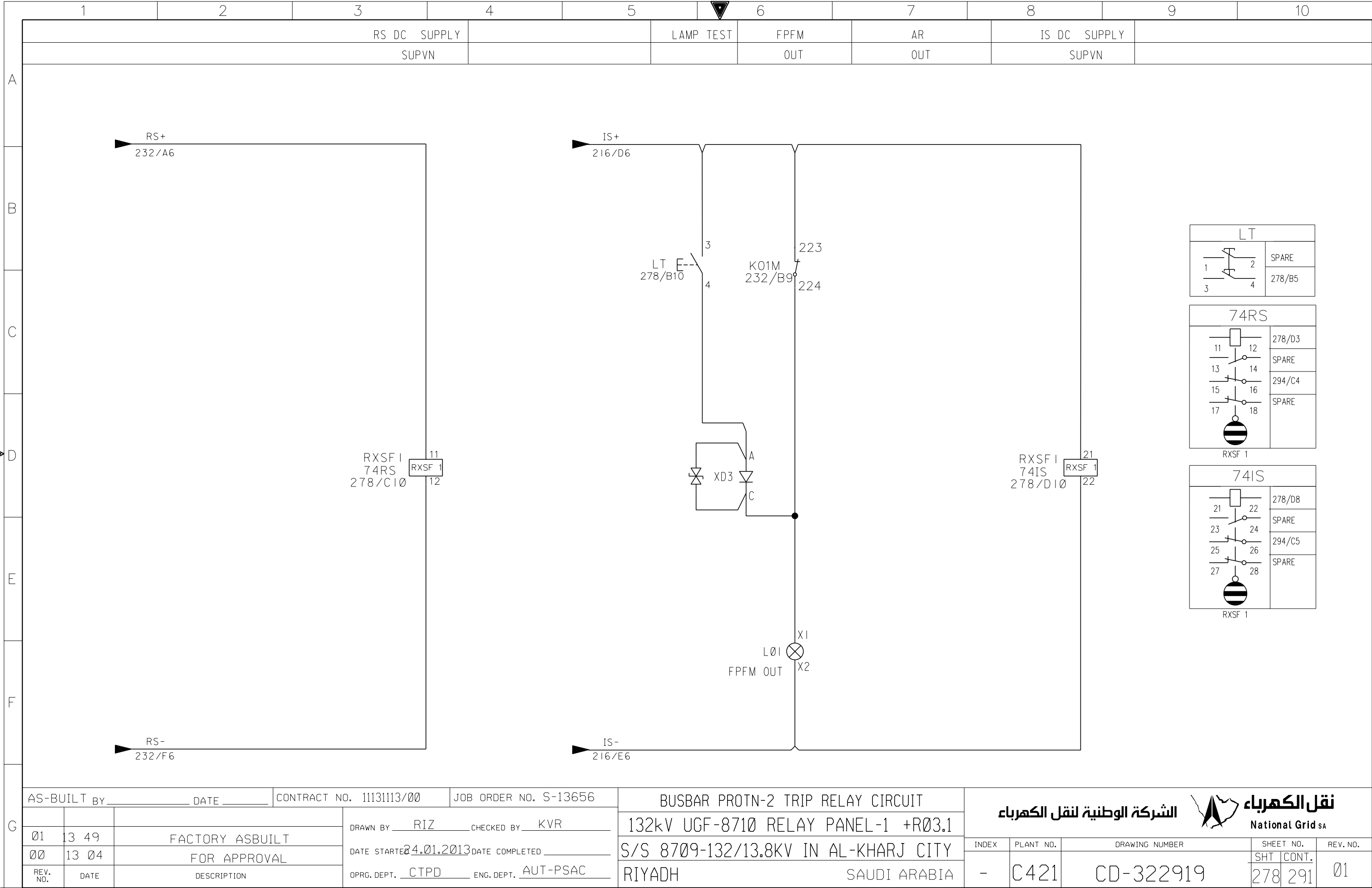
G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		COMMUNICATION CIRCUITS		<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>		<div>INDEX</div> <div>PLANT NO.</div> <div>DRAWING NUMBER</div> <div>SHEET NO.</div> <div>REV. NO.</div>			
				DRAWN BY RIZ CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-1 +R03.1								
	01	13 49	FACTORY ASBUILT		DATE STARTED 24.01.2013 DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY							
	00	13 04	FOR APPROVAL		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA							
	REV. NO.	DATE	DESCRIPTION						-	C421	CD-322919	223	231	01




G	AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CBF-1/2 & BUSBAR PROTN-1 TRIP RELAY CIRCUIT		<div><div>الشركة الوطنية لنقل الكهرباء</div><div>نقل الكهرباء</div><div>National Grid SA</div></div>				
				DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>		132kV UGF-8710 RELAY PANEL-1 +R03.1							
	01	13 49	FACTORY ASBUILT	DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY							
	00	13 04	FOR APPROVAL	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>		RIYADH SAUDI ARABIA							
	REV. NO.	DATE	DESCRIPTION			INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.		
					-	C421	CD-322919	SHT	CONT.				
								276	277	01			

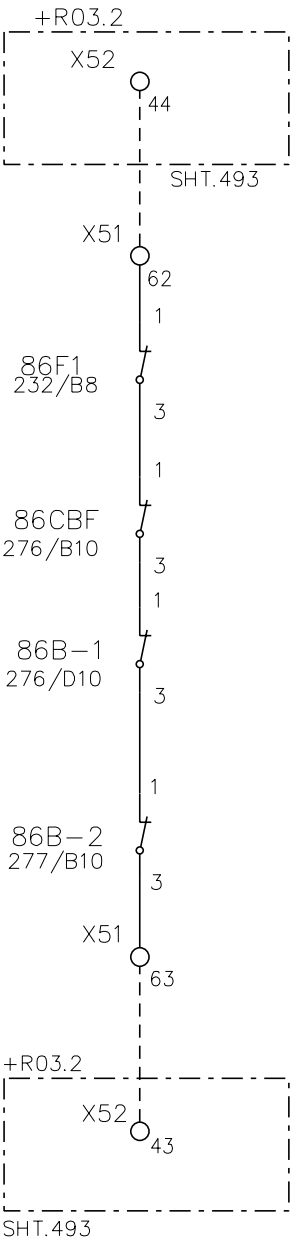




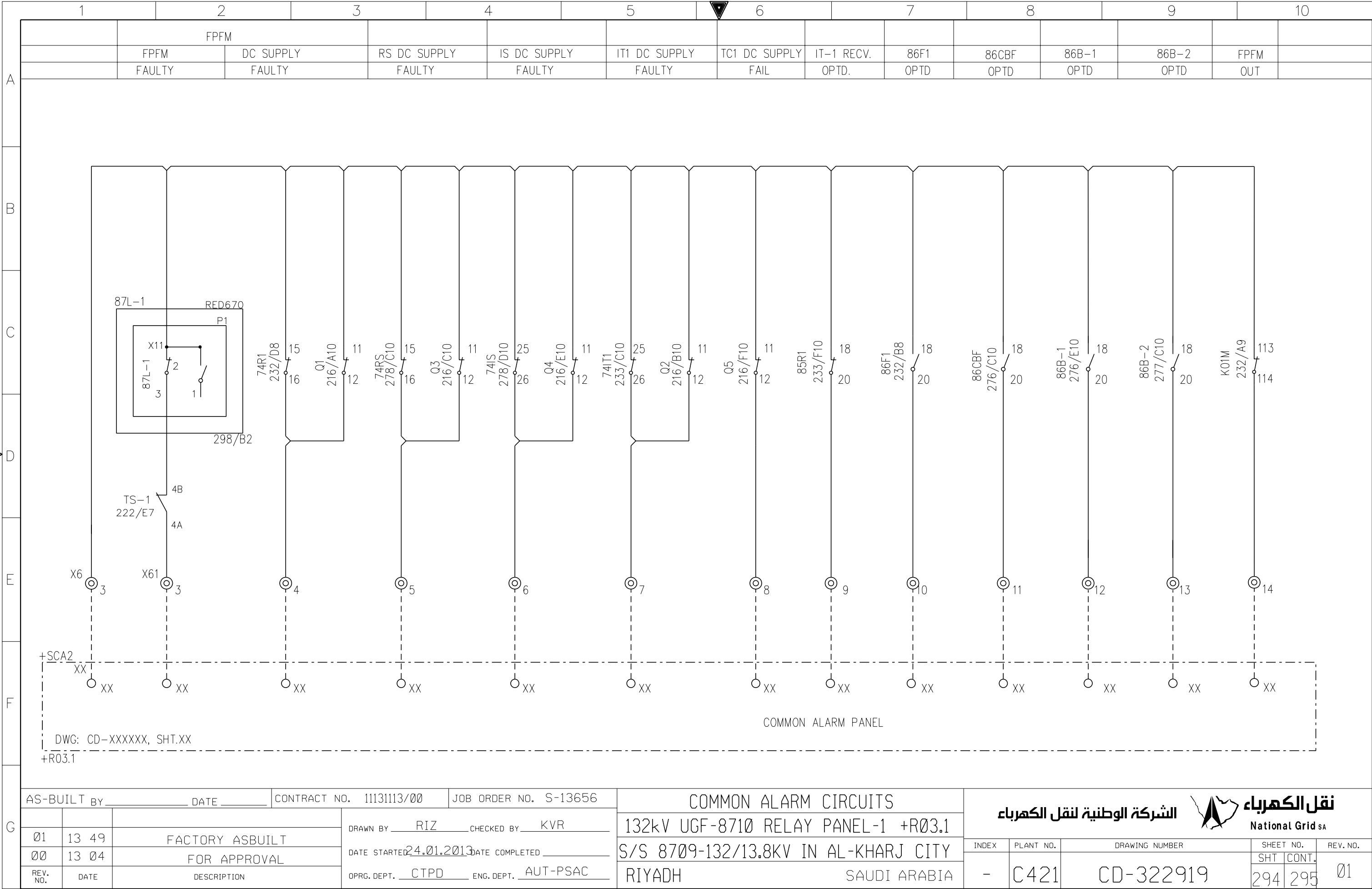


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	1	2	3	4	5	6	7	8	9	10					
A	CLOSE BLOCKING														
	PROTECTION														
B															
C															
D															
E															
F															
G	AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		CLOSE BLOCK CIRCUIT			<div>الشركة الوطنية لنقل الكهرباء</div> <div> نقل الكهرباء</div> <div>National Grid sa</div>				
	01	13 49	FACTORY ASBUILT	DRAWN BY <u>RIZ</u> CHECKED BY <u>KVR</u>			132kV UGF-8710 RELAY PANEL-1 +R03.1			INDEX		PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
	00	13 04	FOR APPROVAL	DATE STARTED <u>24.01.2013</u> DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY							SHT	CONT.
	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSAC</u>			RIYADH SAUDI ARABIA			-		C421	CD-322919	293	294



+R03.1

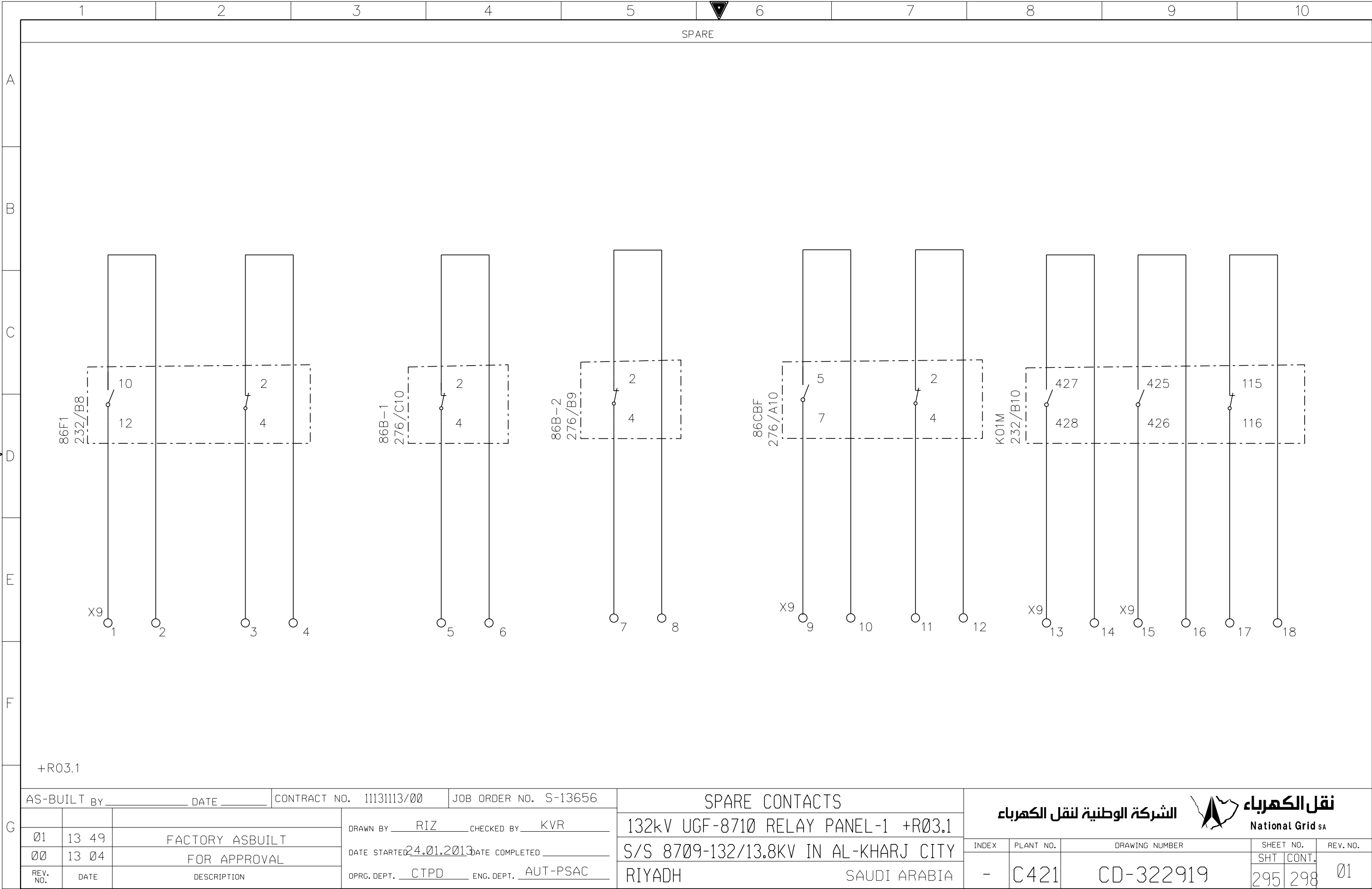


AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

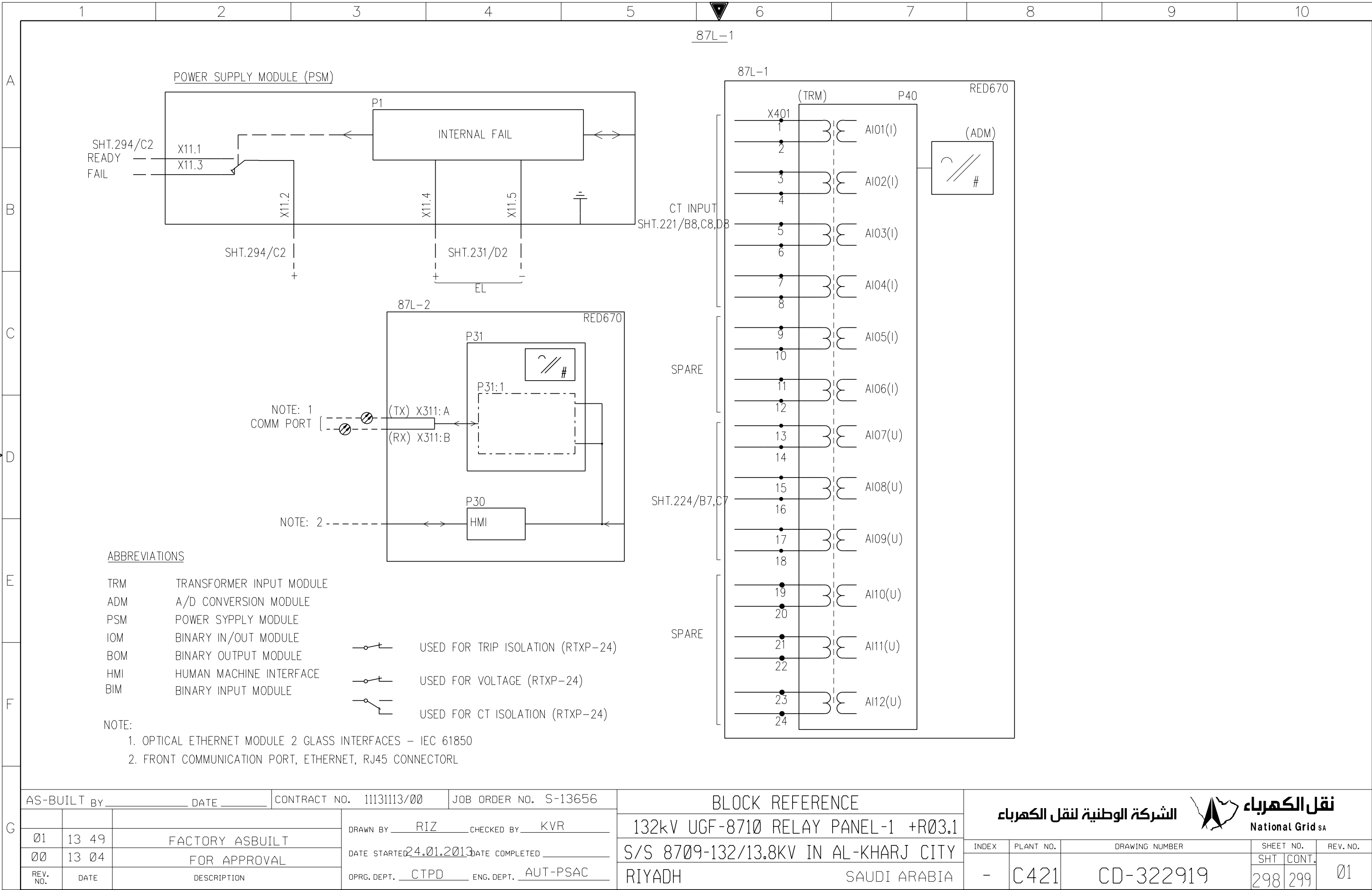
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY KVR DATE STARTED 24.01.2013 DATE COMPLETED _____ OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC
		FOR APPROVAL	
		DESCRIPTION	

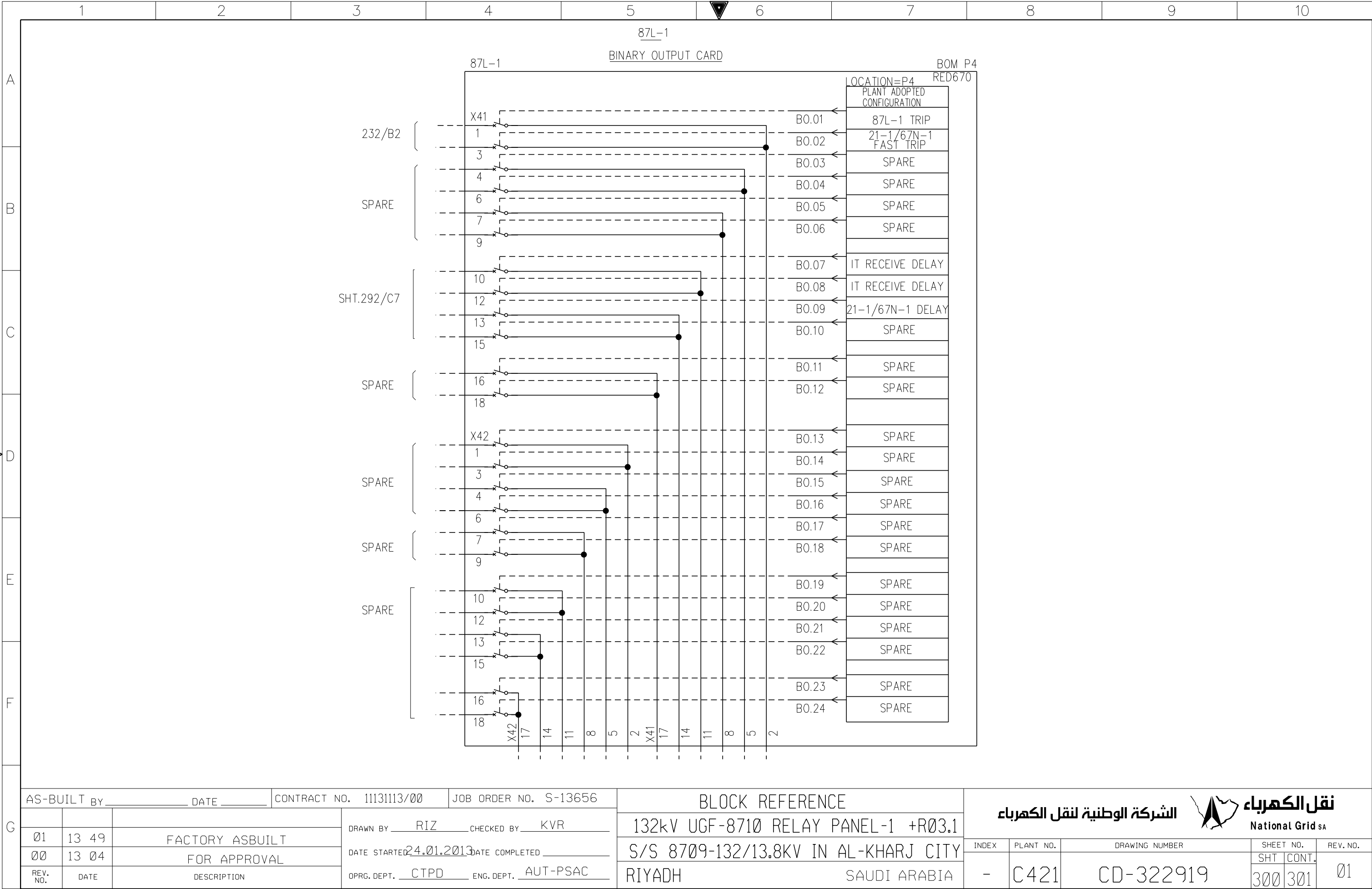
COMMON ALARM CIRCUITS
132kV UGF-8710 RELAY PANEL-1 +R03.1
S/S 8709-132/13.8KV IN AL-KHARJ CITY
RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء			 نقل الكهرباء National Grid SA		
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.		REV. NO.
	C421	CD-322919	SHT	CONT.	01
			294	295	



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NG/D2-D (2012/01)

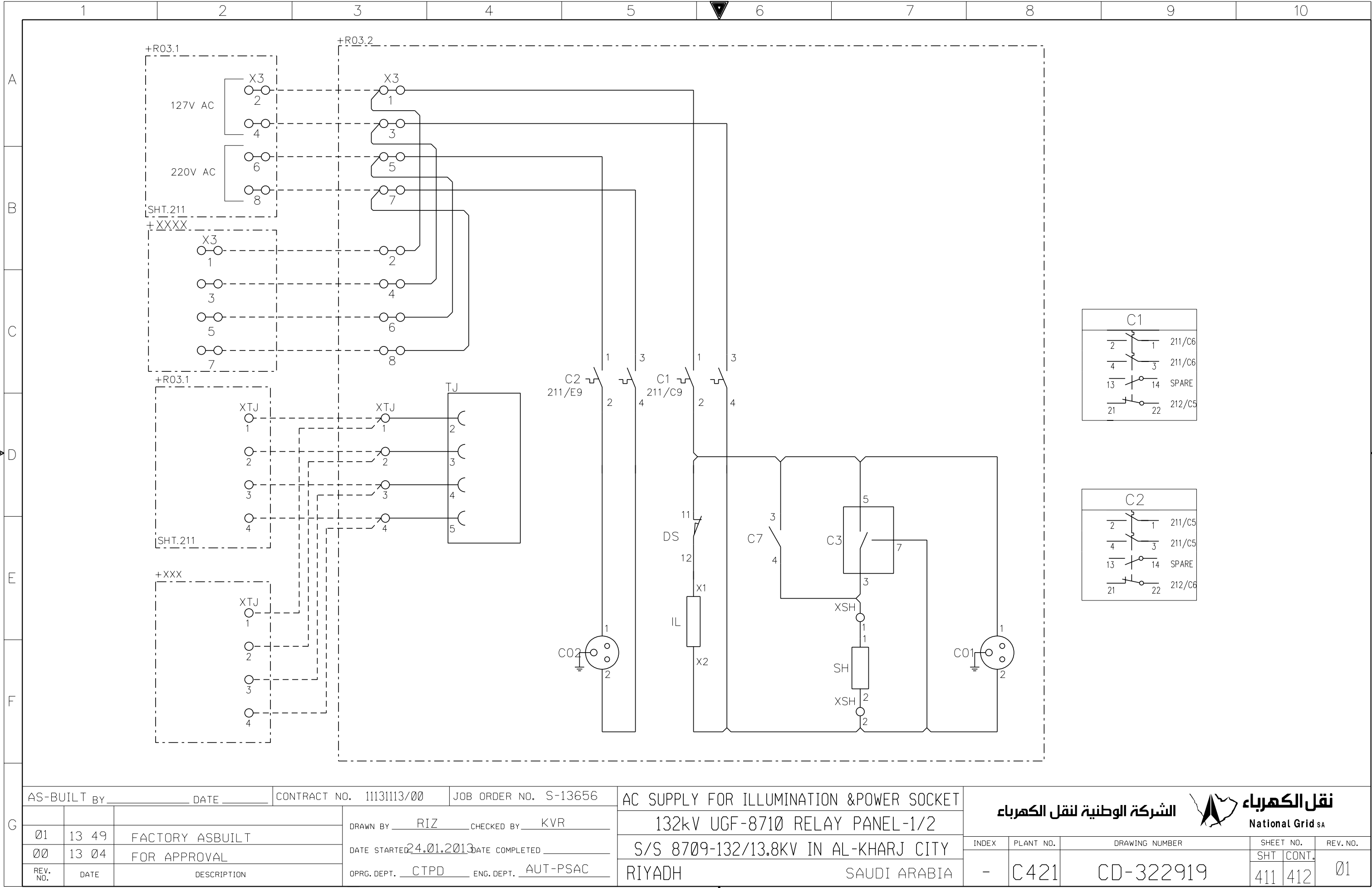
DMS

VECTOR

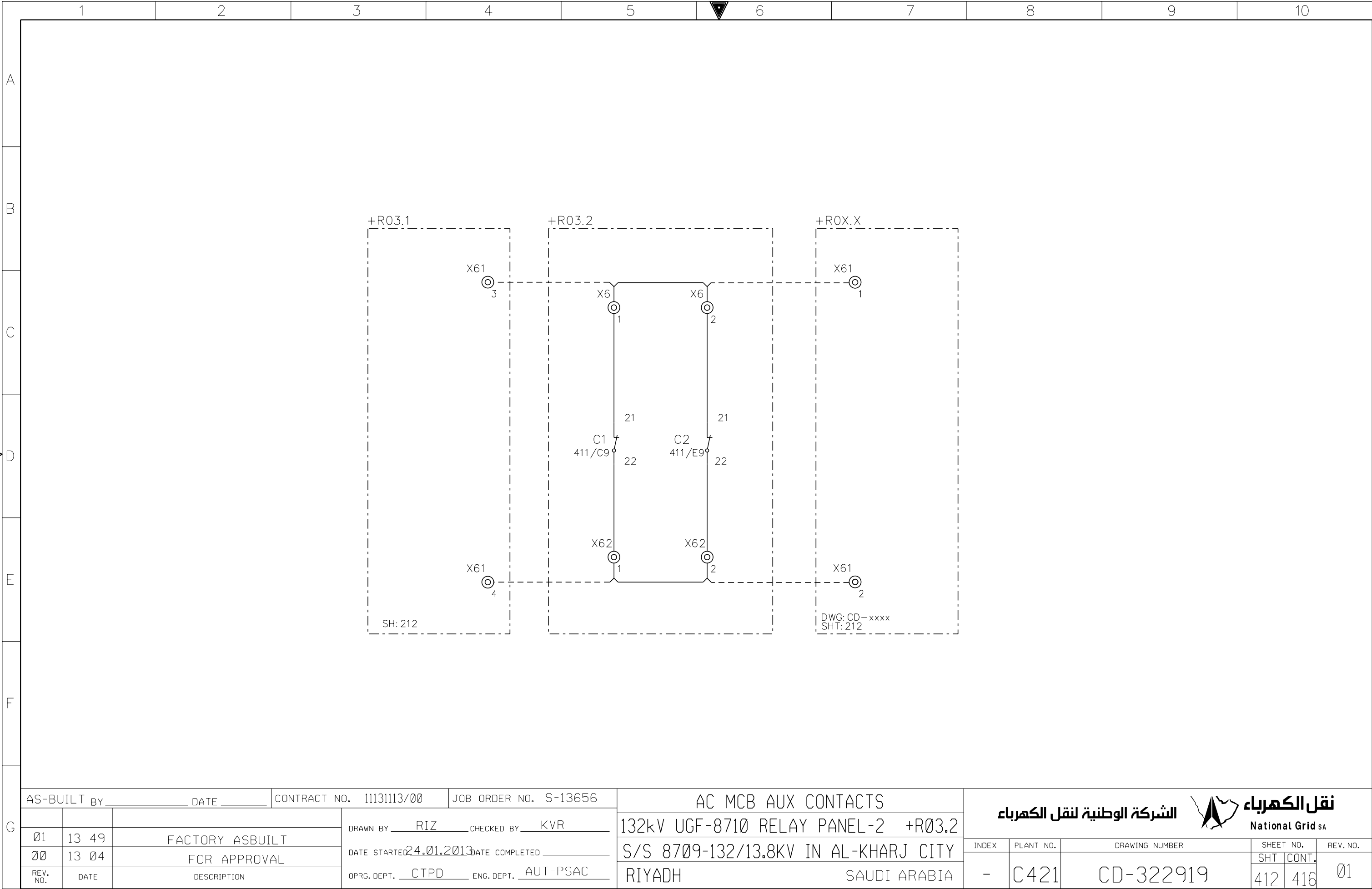
NGD200

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A		<table><tr><th>REFERENCE</th><th>X1 CT CKT.</th></tr><tr><td>221/C5</td><td>1</td></tr><tr><td>221/C5</td><td>2</td></tr><tr><td>221/C5</td><td>3</td></tr><tr><td>221/C5</td><td>4</td></tr><tr><td>221/D5</td><td>5</td></tr><tr><td>221/D5</td><td>6</td></tr><tr><td>221/D5</td><td>7</td></tr><tr><td>221/D5</td><td>8</td></tr><tr><td>221/D5</td><td>9</td></tr><tr><td>SPARE</td><td>10</td></tr></table>	REFERENCE	X1 CT CKT.	221/C5	1	221/C5	2	221/C5	3	221/C5	4	221/D5	5	221/D5	6	221/D5	7	221/D5	8	221/D5	9	SPARE	10		<table><tr><th>REFERENCE</th><th>X2 VT CKT.</th></tr><tr><td>222/B4</td><td>1</td></tr><tr><td>222/B4</td><td>2</td></tr><tr><td>222/C4</td><td>3</td></tr><tr><td>222/C4</td><td>4</td></tr><tr><td>SPARE</td><td>5</td></tr></table>	REFERENCE	X2 VT CKT.	222/B4	1	222/B4	2	222/C4	3	222/C4	4	SPARE	5			<table><tr><th>REFERENCE</th><th>X41 DC CKTS.</th></tr><tr><td>216/B3</td><td>1</td></tr><tr><td>216/B3</td><td>2</td></tr><tr><td>216/B3</td><td>3</td></tr><tr><td>216/C3</td><td>4</td></tr><tr><td>216/C3</td><td>5</td></tr><tr><td>216/C3</td><td>6</td></tr><tr><td>216/C7</td><td>7</td></tr><tr><td>216/C7</td><td>8</td></tr><tr><td>216/C7</td><td>9</td></tr><tr><td>216/C7</td><td>10</td></tr><tr><td>216/D3</td><td>11</td></tr><tr><td>216/D3</td><td>12</td></tr><tr><td>216/D7</td><td>13</td></tr><tr><td>216/D7</td><td>14</td></tr><tr><td>216/D7</td><td>15</td></tr><tr><td>216/D7</td><td>16</td></tr><tr><td>216/E3</td><td>17</td></tr><tr><td>216/E3</td><td>18</td></tr><tr><td>SPARE</td><td>19</td></tr><tr><td>SPARE</td><td>20</td></tr><tr><td>231/B3</td><td>21</td></tr><tr><td>231/B4</td><td>22</td></tr><tr><td>231/B4</td><td>23</td></tr><tr><td>231/B5</td><td>24</td></tr><tr><td>231/B5</td><td>25</td></tr><tr><td>231/B6</td><td>26</td></tr><tr><td>231/B8</td><td>27</td></tr><tr><td>231/B9</td><td>28</td></tr><tr><td>SPARE</td><td>29</td></tr><tr><td>SPARE</td><td>30</td></tr><tr><td>SPARE</td><td>31</td></tr></table>	REFERENCE	X41 DC CKTS.	216/B3	1	216/B3	2	216/B3	3	216/C3	4	216/C3	5	216/C3	6	216/C7	7	216/C7	8	216/C7	9	216/C7	10	216/D3	11	216/D3	12	216/D7	13	216/D7	14	216/D7	15	216/D7	16	216/E3	17	216/E3	18	SPARE	19	SPARE	20	231/B3	21	231/B4	22	231/B4	23	231/B5	24	231/B5	25	231/B6	26	231/B8	27	231/B9	28	SPARE	29	SPARE	30	SPARE	31	<table><tr><th>REFERENCE</th><th>X51 CON & PROTN 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G	AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656			DRAWN BY RIZ CHECKED BY KVR			DATE STARTED 24.01.2013 DATE COMPLETED _____			OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC			TERMINAL BLOCKS PANEL +R01.1			132kV UGF-8710 RELAY PANEL-1 +R03.1			S/S 8709-132/13.8KV IN AL-KHARJ CITY			RIYADH SAUDI ARABIA			الشركة الوطنية لنقل الكهرباء			National Grid sa			INDEX PLANT NO. C421 DRAWING NUMBER CD-322919			SHEET NO. SHT 301 CONT. 411			REV. NO. 01																																																																																																																																																																																																														

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+R0X.X

X61

1

X61

2

DWG: CD-xxxx
SHT: 212

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		AC MCB AUX CONTACTS			<div>الشركة الوطنية لنقل الكهرباء</div> <div>نقل الكهرباء</div> <div>National Grid sa</div>		
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ			CHECKED BY KVR			132kV UGF-8710 RELAY PANEL-2 +R03.2			
00	13 04	FOR APPROVAL	DATE STARTED 24.01.2013			DATE COMPLETED _____			S/S 8709-132/13.8KV IN AL-KHARJ CITY			
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD			ENG. DEPT. AUT-PSAC			RIYADH SAUDI ARABIA			

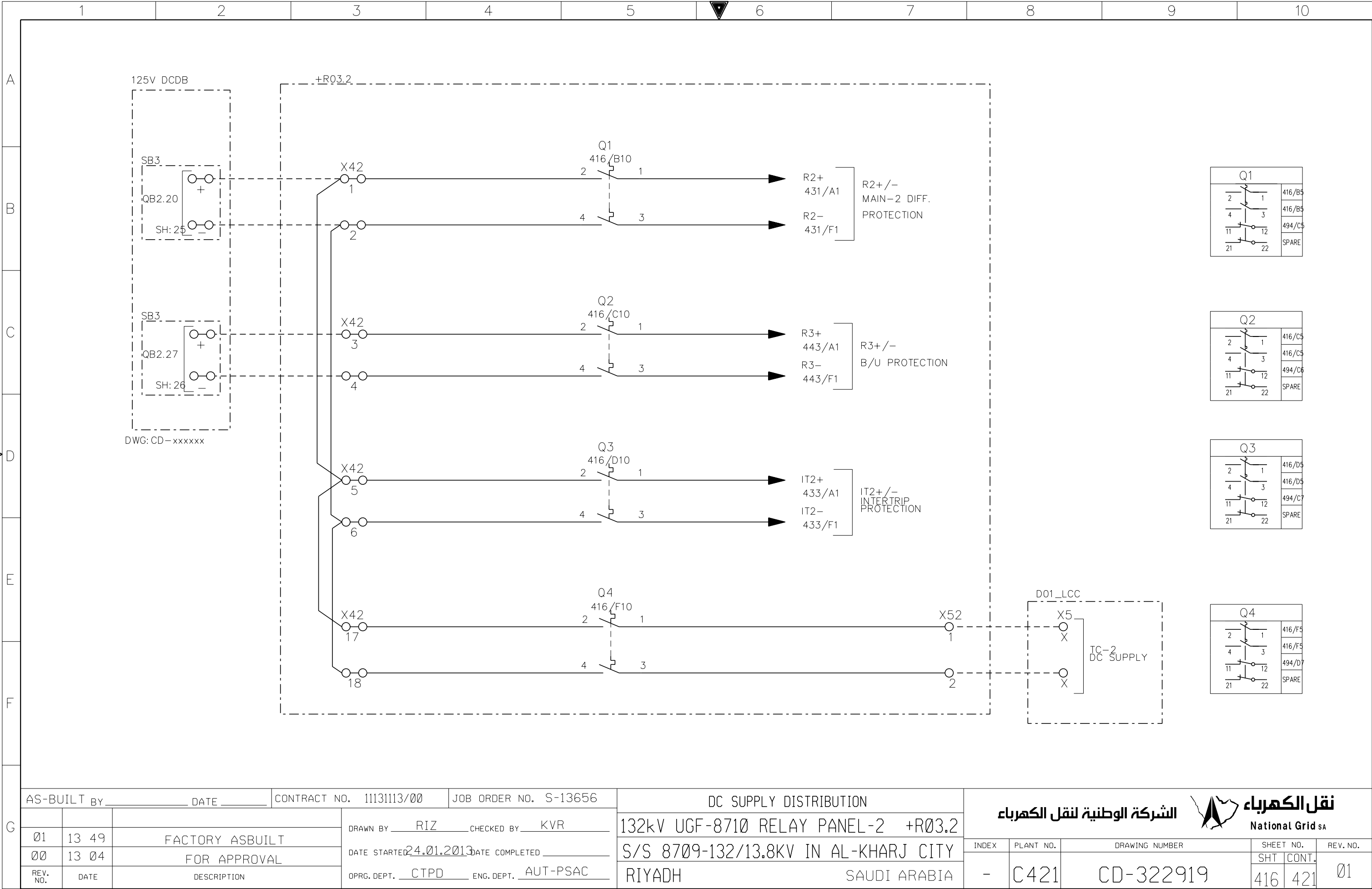
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-	C421	CD-322919	SHT	CONT.	01
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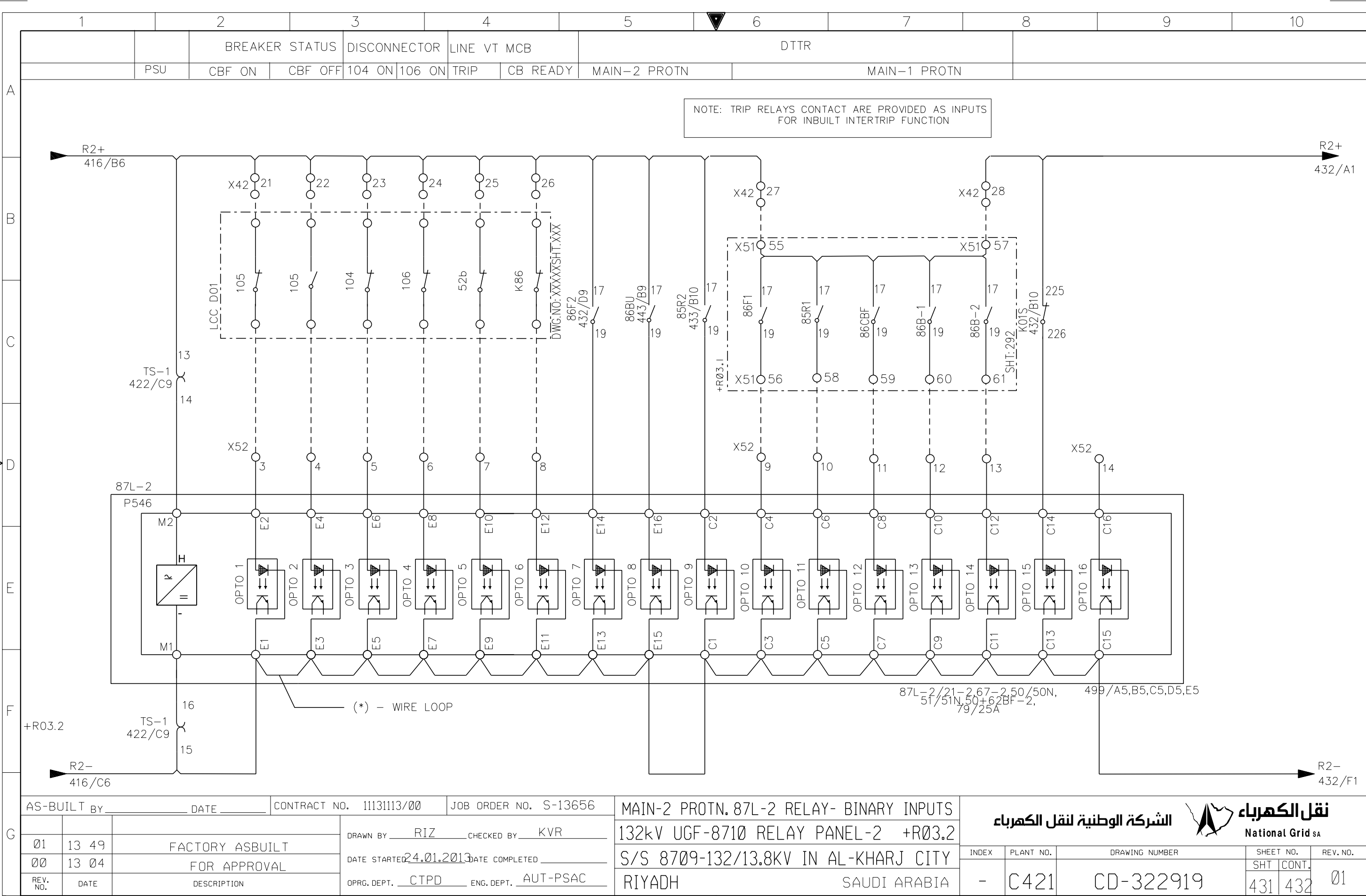
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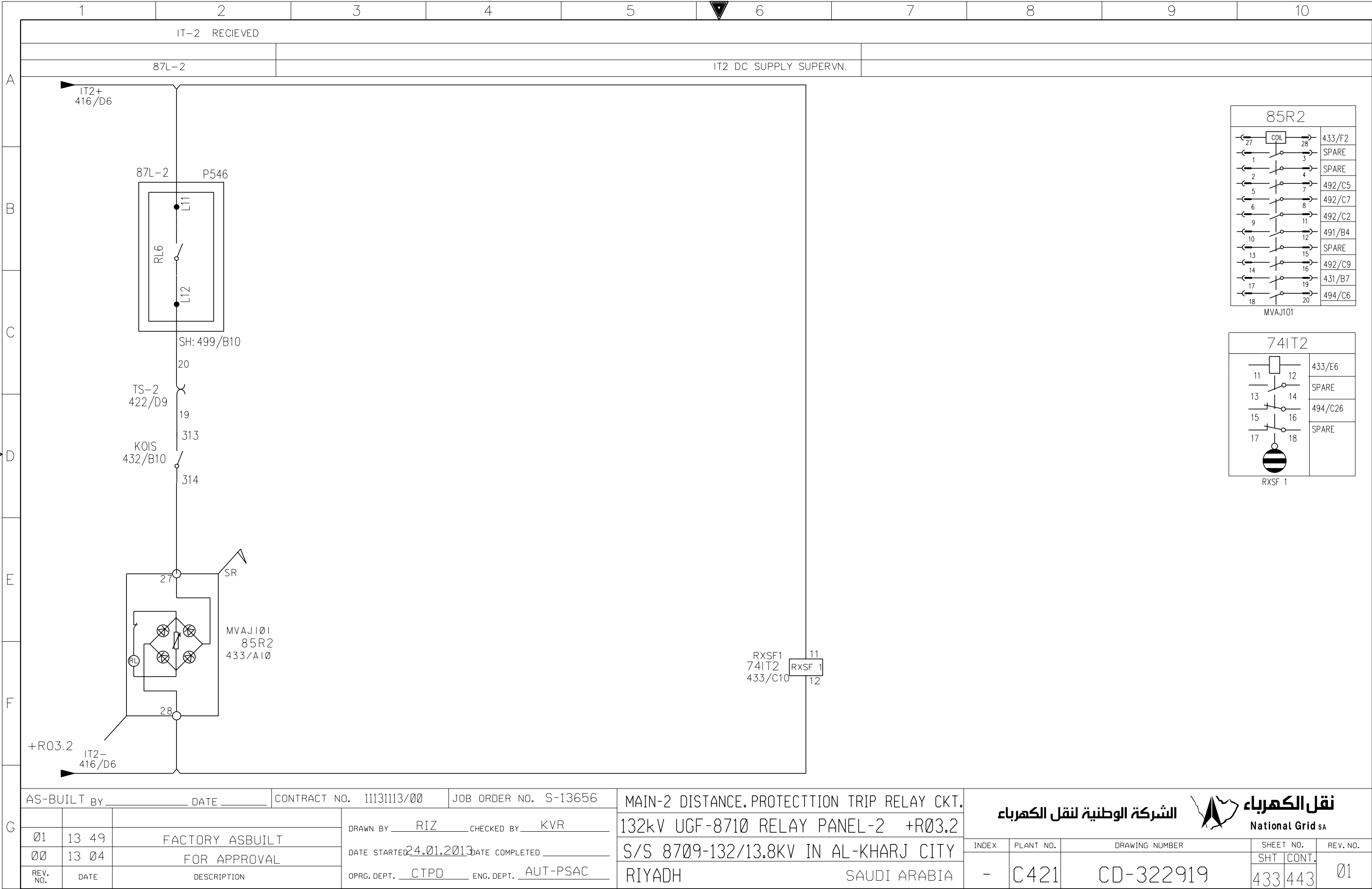
DMS

VECTOR

NGD200







AS-BUILT BY _____ DATE _____ CONTRACT NO. 11131113/00 JOB ORDER NO. S-13656

01

13 49

FACTORY ASBUILT

00

13 04

FOR APPROVAL

REV. NO.

DATE

DESCRIPTION

DRAWN BY RIZ CHECKED BY KVR

DATE STARTED 24.01.2013 DATE COMPLETED _____

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC

MAIN-2 DISTANCE.PROTECTION TRIP RELAY CKT.

132kV UGF-8710 RELAY PANEL-2 +R03.2

S/S 8709-132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

الشركة الوطنية لنقل الكهرباء

نقل الكهرباء

National Grid sa

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

REV. NO.

SHT

CONT.

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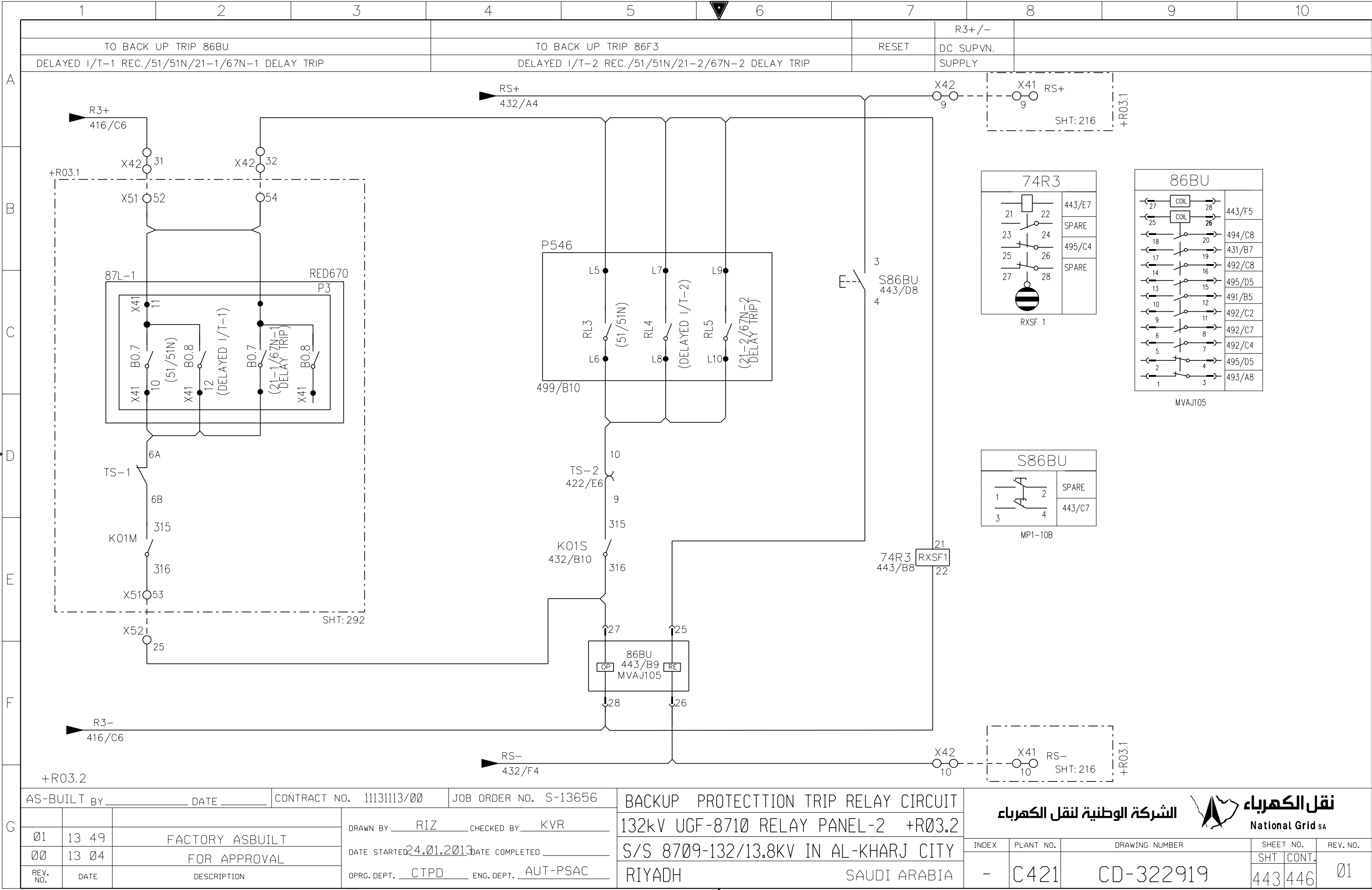
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CD-322919

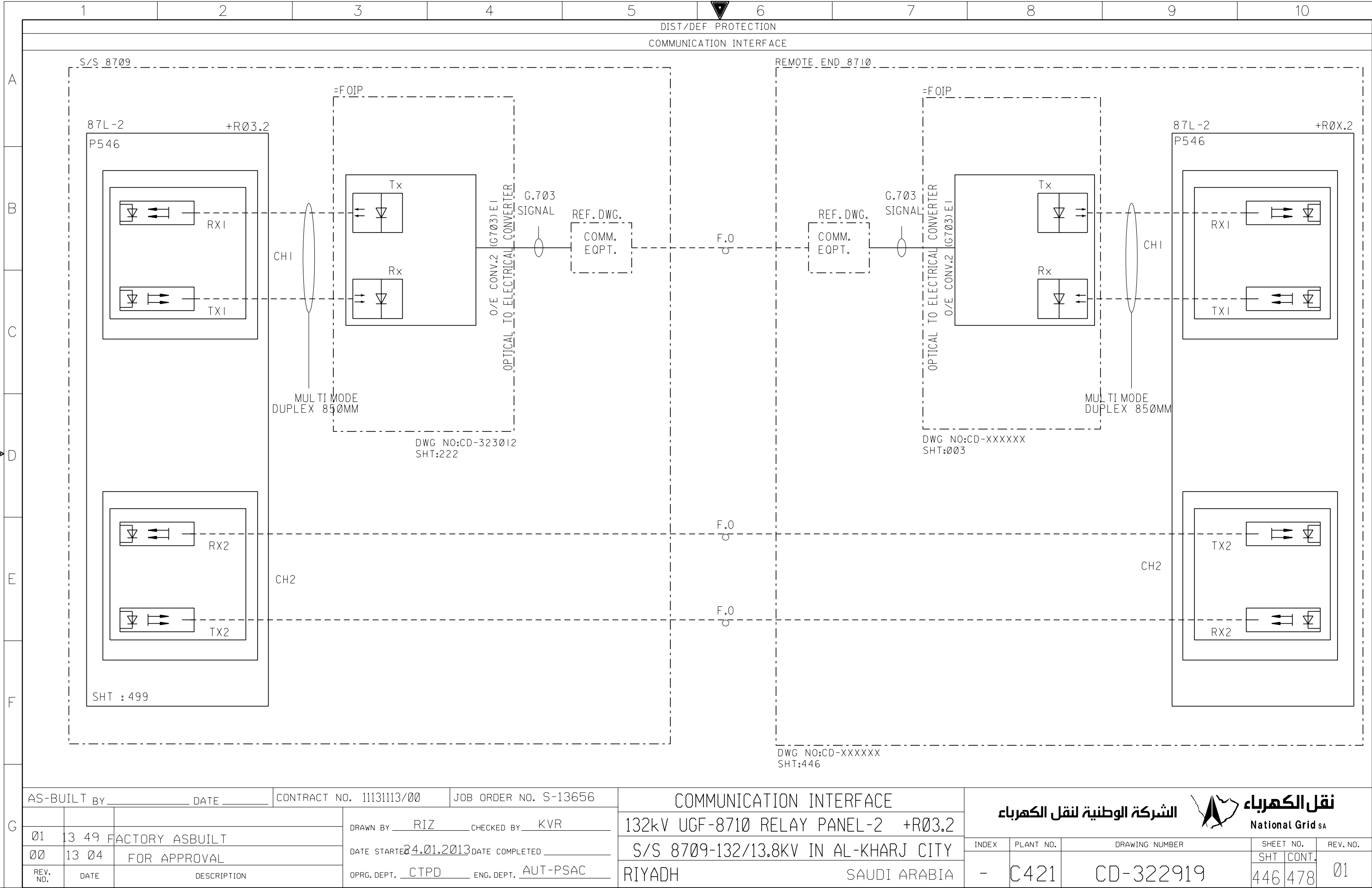
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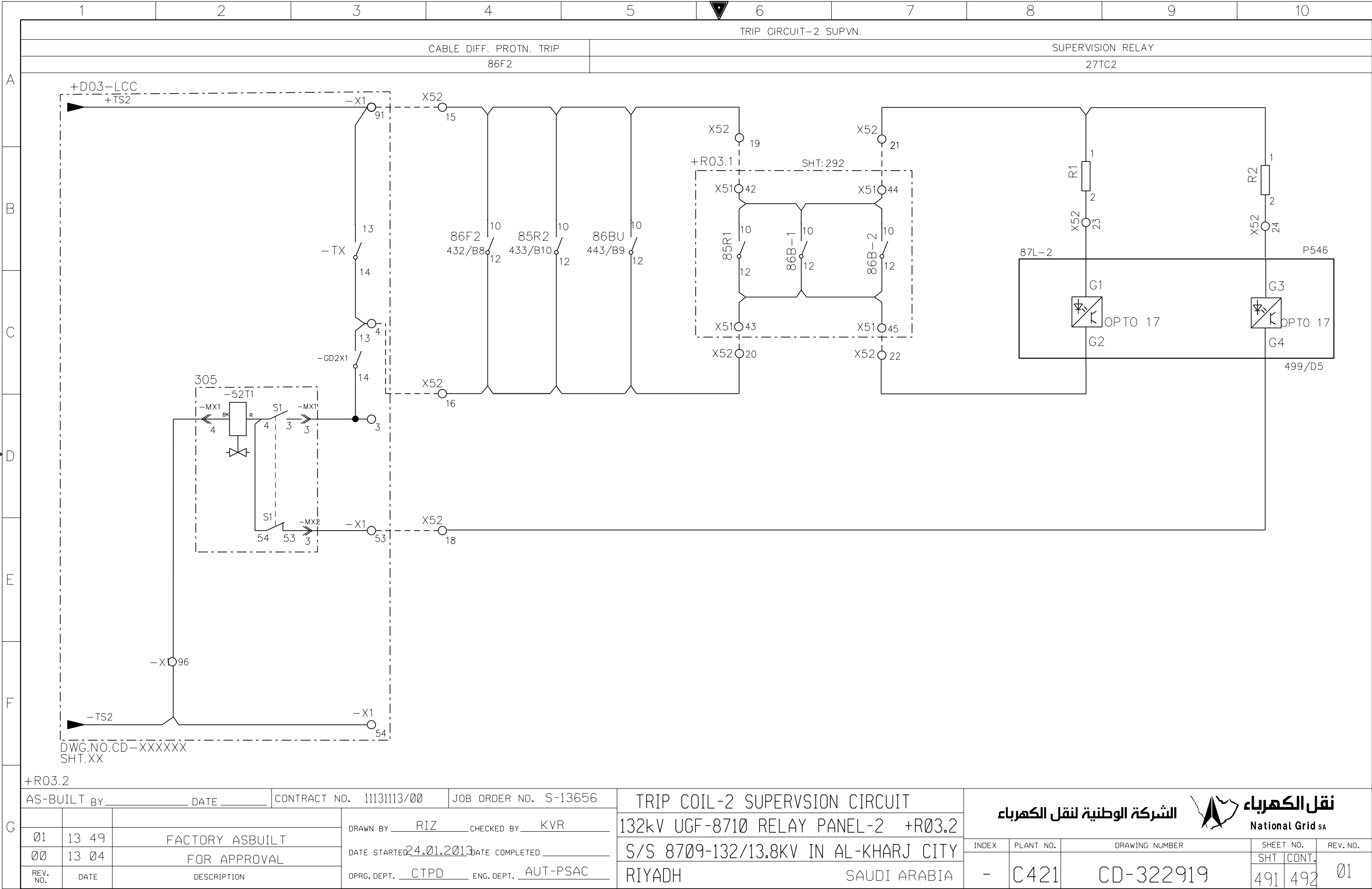
443

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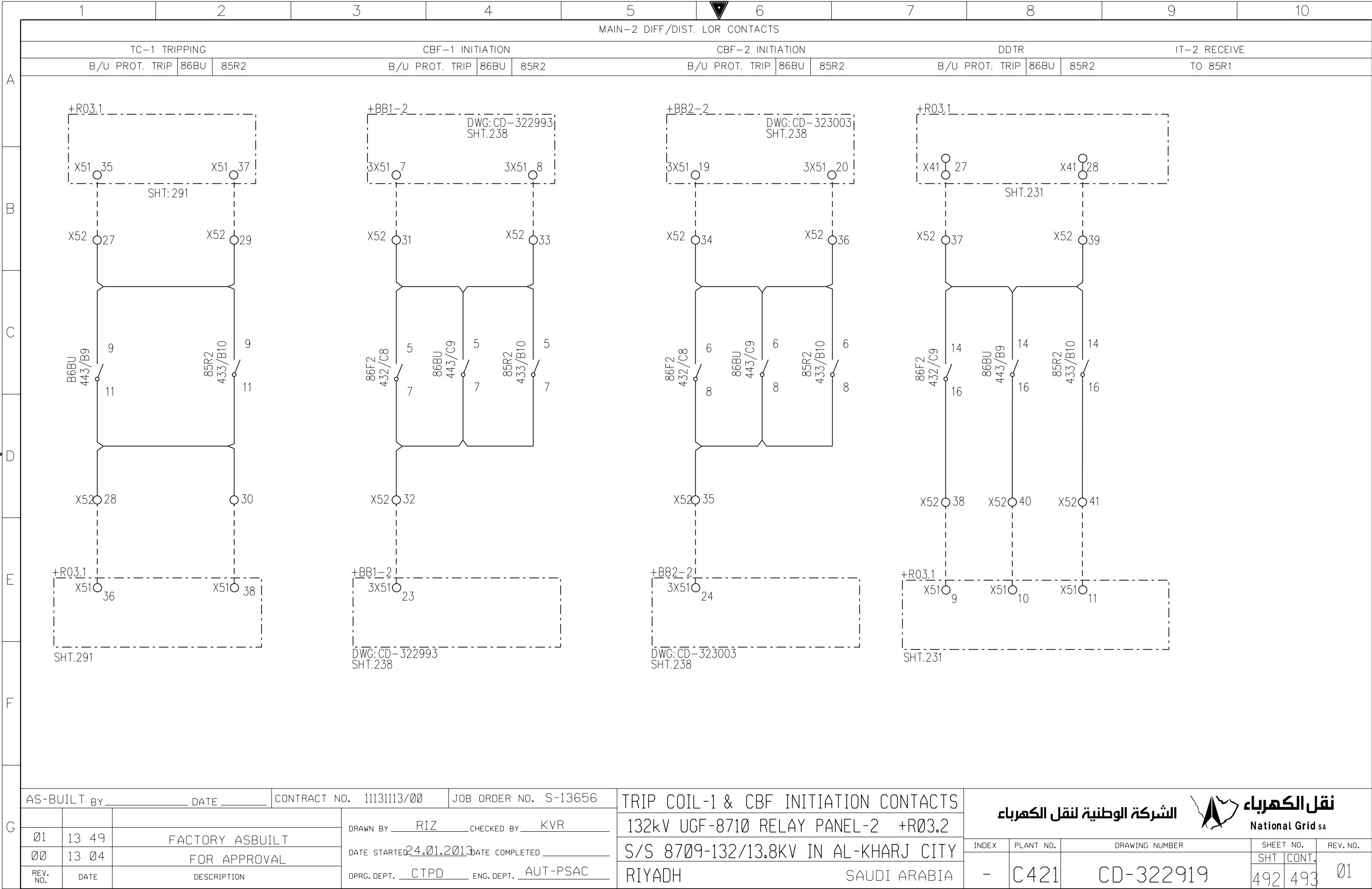


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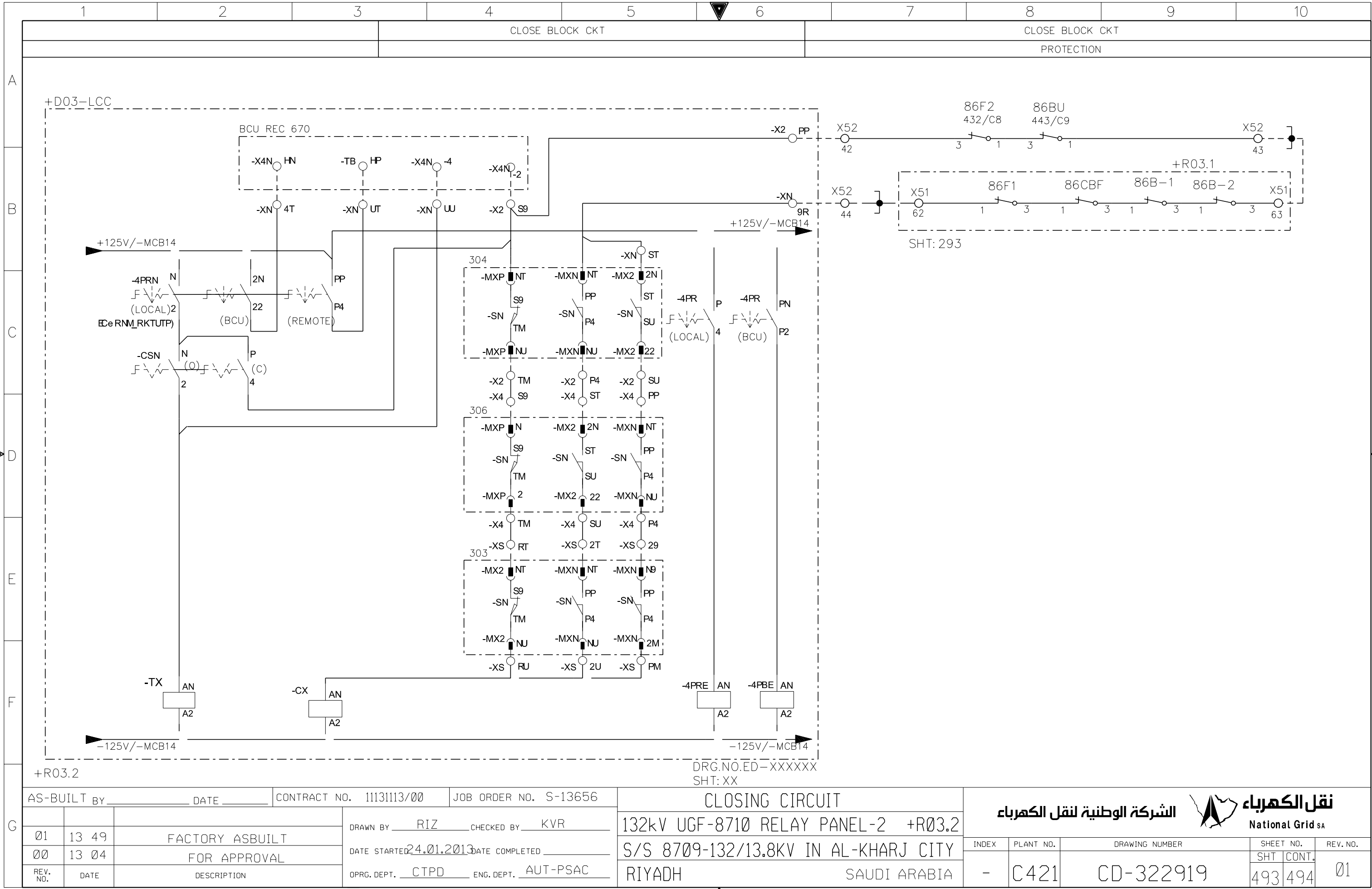


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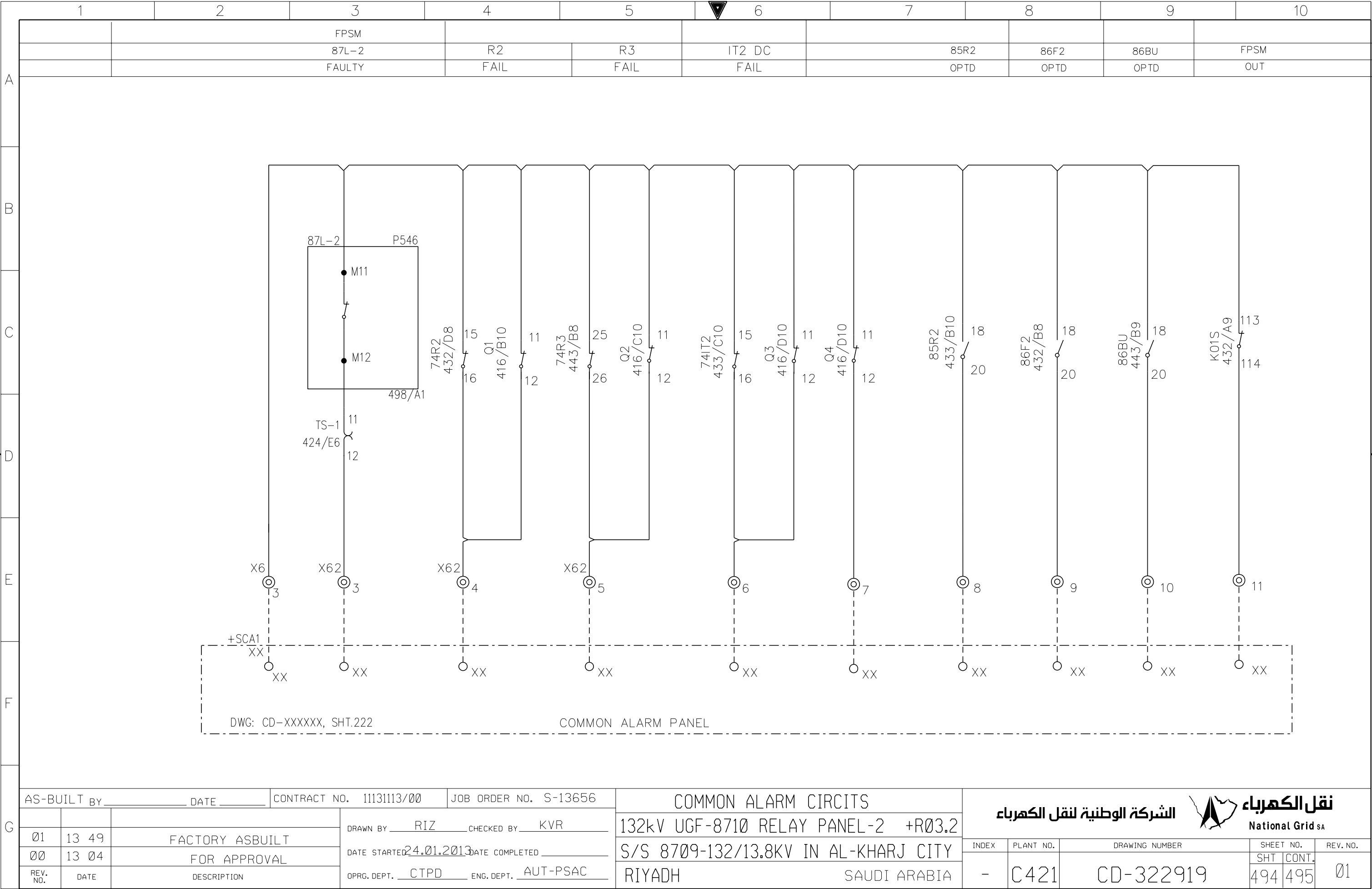


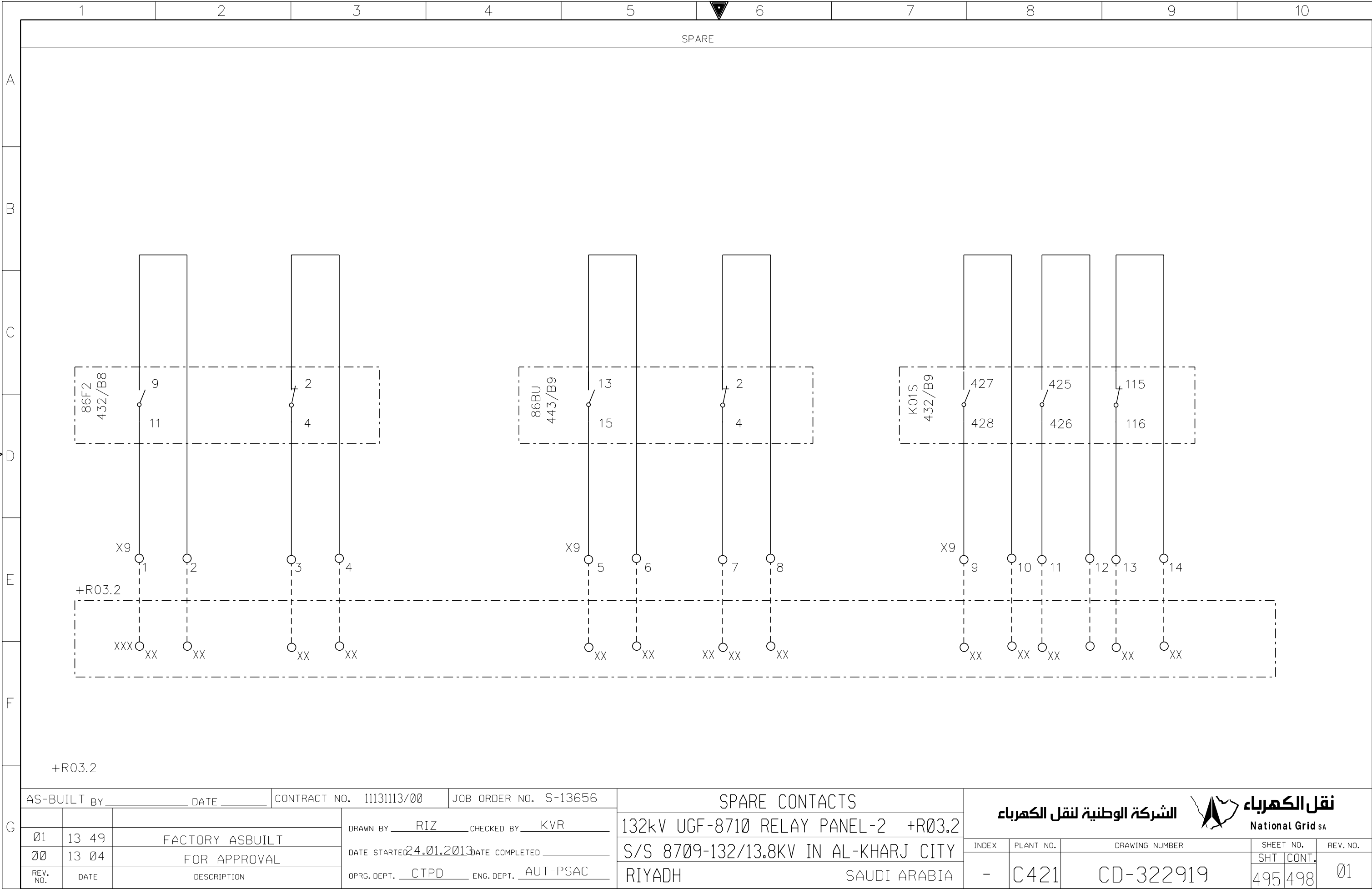
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B										
C										
D										
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F										
G	AS-BUILT BY _____ DATE _____				CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		TERMINAL BLOCKS PANEL +R01.2	
	01	13 49	FACTORY ASBUILT		DRAWN BY RIZ		CHECKED BY KVR		132kV UGF-8710 RELAY PANEL-2 +R03.2	
	00	13 04	FOR APPROVAL		DATE STARTED 24.01.2013		DATE COMPLETED _____		S/S 8709-132/13.8KV IN AL-KHARJ CITY	
	REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA	

REFERENCE	X1 CT CKT.
421/C5	1
421/C5	2
421/C5	3
421/C5	4
421/D5	5
421/D5	6
421/D5	7
421/D5	8
421/E5	9
SPARE	10

REFERENCE	X2 VT CKT.
422/B6	1
422/B6	2
422/C6	3
422/C6	4
SPARE	5

REFERENCE	X3 AC CKT.
411/A3	1
411/B3	2
411/A3	3
411/C3	4
411/B3	5
411/C3	6
411/B3	7
411/C3	8
SPARE	9
SPARE	10

REFERENCE	X6 ALM. CKT.
412/E5	1
412/E5	2
494/E3	3
494/E4	4
494/E5	5
494/E6	6
494/E7	7
494/E8	8
SPARE	9
SPARE	10
SPARE	11
SPARE	12
SPARE	13
SPARE	14
SPARE	15

REFERENCE	X42 DC CKTS.
416/B3	1
416/B3	2
416/B3	3
416/C3	4
416/C3	5
416/C3	6
432/A2	7
432/F2	8
443/A4	9
443/F4	10
SPARE	11
SPARE	12
478/B3	13
478/E3	14
478/B8	15
478/E8	16
416/E3	17
416/E3	18
SPARE	19
SPARE	20
431/B3	21
431/B4	22
431/B4	23
431/B5	24
431/B5	25
431/B6	26
431/B8	27
431/B9	28
SPARE	29
SPARE	30
443/A2	31

REFERENCE	X52 CONTROL & PROTIN CKTS.
416/F7	1
416/F7	2
431/D4	3
431/D4	4
431/D5	5
431/D6	6
431/D6	7
431/D7	8
431/D8	9
431/D8	10
432/C4	11
432/C4	12
443/F2	13
SPARE	14
491/A4	15
491/C4	16
491/E4	17
491/A6	18
491/C6	19
491/A7	20
491/C7	21
491/A8	22
491/B8	23
491/A10	24
443/B10	25
SPARE	26
492/B2	27
492/D2	28
492/B3	29
492/D3	30
492/B4	31
492/D4	32
492/B5	33
492/B6	34
492/D6	35
492/B7	36
492/B8	37
492/D8	38
492/B9	39
492/D9	40
492/A7	41
492/A10	42
492/B7	43
SPARE	44
SPARE	45
SPARE	46
SPARE	47
SPARE	48
SPARE	49
SPARE	50

REFERENCE	X9 SPARE
495/E1	1
495/E2	2
495/E3	3
495/E3	4
495/E5	5
495/E5	6
495/E6	7
495/E6	8
495/E7	9
495/E8	10
495/E8	11
495/E8	12
495/E9	13
495/E9	14
SPARE	15
SPARE	16
SPARE	17
SPARE	18
SPARE	19
SPARE	20
SPARE	21
SPARE	22
SPARE	23
SPARE	24
SPARE	25

REFERENCE	XTJ T.JACK
411/C3	1
411/C3	2
411/D3	3
411/D3	4
SPARE	5

REFERENCE	XSH SPACE HEATER
411/E6	1
411/F6	2
SPARE	3

REFERENCE	X6 ALM. CKT.
412/C5	1
412/C5	2
495/E2	3